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Government
Publications

MACKENZIE VALLEY PIPELINE INQUIRY

IN THE MATTER OF APPLICATIONS BY EACH OF
(a) CANADIAN ARCTIC GAS PIPELINE LIMITED FOR A
RIGHT-OF-WAY THAT MIGHT BE GRANTED ACROSS
CROWN LANDS WITHIN THE YUKON TERRITORY AND
THE NORTHWEST TERRITORIES, and
(b) FOOTHILLS PIPE LINES LTD. FOR A RIGHT-OF-WAY
THAT MIGHT BE GRANTED ACROSS CROWN LANDS
WITHIN THE NORTHWEST TERRITORIES,
FOR THE PURPOSE OF A PROPOSED MACKENZIE VALLEY PIPELINE
and

IN THE MATTER OF THE SOCIAL, ENVIRONMENTAL AND
ECONOMIC IMPACT REGIONALLY OF THE CONSTRUCTION,
OPERATION AND SUBSEQUENT ABANDONMENT OF THE ABOVE
PROPOSED PIPELINE

(Before the Honourable Mr. Justice Berger, Commissioner)

Yellowknife, N.W.T.

December 4, 1975.

PROCEEDINGS AT INQUIRY

Volume 96

APPEARANCES:

Mr. Ian G. Scott, Q.C.,
Mr. Stephen T. Goudge,
Mr. Alick Ryder and
Mr. Ian Roland for Mackenzie Valley Pipeline
Inquiry;

Mr. Pierre Genest, Q.C.,
Mr. Jack Marshall, and
Mr. Darryl Carter for Canadian Arctic Gas
Pipeline Limited;
Mr. Reginald Gibbs, Q.C.,
Mr. Alan Hollingworth &
Mr. John W. Lutes, for Foothills Pipe Lines Ltd.;

Mr. Russell Anthony &
Pro. Alastair Lucas for Canadian Arctic Resources
Committee;

Mr. Glen W. Bell and
Mr. Gerry Sutton, for Northwest Territories
Indian Brotherhood, and
Metis Association of the
Northwest Territories;

Mr. John Bayly
or
Miss Leslie Lane for Inuit Tapirisat of Canada,
and The Committee for
Original Peoples Entitle-
ment;

Mr. Ron Veale and
Mr. Allen Lueck for The Council for the Yukon
Indians;

Mr. Carson H. Templeton, for Environment Protection
Board;

Mr. David Reesor for Northwest Territories
Association of Municipal-
ities;

Mr. Murray Sigler for Northwest Territories
Chamber of Commerce.

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I N D E X

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WITNESSES FOR CANADIAN ARCTIC GAS PIPELINE LIMITED:

Alexander William Francis BANFIELD

William W.H. GUNN

Russell Alexander HEMSTOCK

Peter J. McCART

Ronald Daniel JAKIMCHUK

- Cross-Examination by Mr. Veale

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Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Veale
Yellowknife, N.W.T.

December 4, 1975.

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

THE COMMISSIONER: We'll come
to order this morning, ladies and gentlemen, and Mr.
Veale, you can carry on now if you wish.

MR. VEALE: Yes, Mr. Commiss-
ioner, the meeting of counsel was held last night and
there will probably be a further motion with notice
given to the other participants.

ALEXANDER WILLIAM F. BANFIELD,
WILLIAM W.H. GUNN
RUSSELL ALEXANDER HEMSTOCK
PETER J. McCART
RONALD DANIEL JAKIMCHUK, resumed:

CROSS-EXAMINATION BY MR. VEALE:

Q Mr. Jakimchuk, I under-
stand from the transcript that you will be submitting
a list of recommendations to the applicant at a future
time, and that that will be produced at this Inquiry.
Is that correct?

WITNESS JAKIMCHUK: Well, I'm
bringing together all of our recommendations and up-
dating them. I don't know if I can commit them to
this Inquiry myself or not.

Q Perhaps Mr. Marshall
could clarify that.

MR MARSHALL: Yes.

MR. VEALE: There was one
reference that I've been unable to find the particular
volume, and perhaps you could explain if it is available,
and it relates to a December 1971 report of the North-

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2 west Study project wildlife series. It was prepared by
3 Williams Brothers Canada Limited, prepared for Williams
4 Brothers by Renewable Resources, and that is Volume I,
5 and in the last paragraph of the table of contents on
6 page 7 it says:

7 "This volume presents the scope, objectives,
8 methods and results of the 1971 investigations."

9 And then it says:

10 "Discussions, conclusions and recommendations
11 are in Volume II."

12 Is there a Volume II?

13 A I'm thinking back now
14 four years. Yes, there is a Volume II.

15 Q And that is available,
16 is it?

17 A Well, actually I don't
18 know. Those were the original consultant reports to
19 the client, material of which has eventually been
20 produced in the Biological Report series, and parti-
21 cularly Volume IV of the Biological Report series is
22 based entirely upon those original reports of ours.
23 Those are unpublished reports.

24 Q Now I take it that that
25 volume then is available, is it, Mr. Marshall?

26 MR. MARSHALL: I'll check to
27 see if we have a copy. If there is a copy and it seems
28 to me it's relevant it will be made available.

29 MR. VEALE: Q Mr. Jakimchuk ,
30 at page 62 of the evidence of the applicant in this

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1 phase, you mentioned that the coastal route has inter-
2 action with muskox in Alaska and you indicate that there
3 is a population of 30 to 40 muskox. Is that population,
4 is that based on a count done by you for the applicant?

5 A It's based on counts done
6 by Renewable Resources, yes. Not me personally.

7 Q I see. Well, to begin
8 with, I've been informed by people in Alaska that the
9 herd is closer to 75, would you have any difficulty
10 with that?

11 A Unless there has been a
12 dramatic change in this last season for which I have
13 not got data, I don't think that is correct. We have
14 as a matter of fact obtained the most current and the
15 most complete data on the distribution and numbers of
16 those muskox of any agency that I am aware of, and it
17 is nowhere near 75. However, one of my colleagues is
18 up here, Mr. Roseneau, and I will check that with him
19 today.

20 Q Thank you. Do I under-
21 stand it correctly that this small herd is an introduced
22 herd?

23 A That's correct.

24 Q And do you recall the year
25 in which it was introduced?

26 A I do not precisely.
27 There's quite a description of this in our Biological
28 Report series, Volume 6, for example, has a discussion
29 of the history of this herd and I may be able to find
30 that for you very quickly. O.K., I can give you a

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1
2 little summary of this information, I believe.

3 In 1930 the U.S. Biological
4 Survey imported 34 muskox to Alaska from Greenland.
5 That was a program originally to conduct studies of
6 domestication and feeding.

7 The Arctic Slope transplants
8 began with the Alaska Department of Fish & Game, and
9 the Bureau of Sport Fisheries & Wildlife released 52
10 Nunabak Island Muskox at Barter Island during March
11 and April, 1969. So we'll put that as during the
12 spring of 1969 that that transplant was carried out;
13 and in March '70 a second transplant was carried out
14 in another part of Alaska.

15 But the ones we're talking
16 about were March '69.

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1 Q I see. They were in-
2 troduced in March '69 and there were 52 at that time
3 and your figures indicate that there are 30 to 40 now.
4 That obviously represents a decline.

5 A Well, there were some
6 losses, there were some mortality immediately after the
7 re-introduction as a result of the transplant.

8 Q Well, then, is the 30
9 to 40, does that represent now the build up of the
10 herd since the initial mortality at introduction?

11 A Well, there have been
12 productivity that we have documented in the herd,
13 for example, I believe it was in 1972 that there
14 were seven calves observed of which four were
15 documented as dying during that year, so there
16 has not been a dramatic increase at all in population.

17 Q So, that was in 1972
18 then, that there was an overall increase of three in
19 the herd?

20 A Well, there has been
21 some mortality in the adults as well. I think we would
22 be in the safest position to say that the herd is
23 maintaining itself, but is neither increasing nor
24 decreasing significantly.

25 Q Would you say then that
26 the herd is in a particularly delicate stage of its
27 development at this time?

28 A Not necessarily.

29 Q For instance -- in
30 comparison, say, to the Porcupine caribou herd, we are

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1 dealing with substantial different figures and if they
2 did have, say, a very bad year where mortality through
3 old age and disease and accidents was in the neighbour-
4 hood of ten, and the calf crop was in the neighbourhood
5 of six or seven and only three of those survived, that
6 would represent a very significant decline for that
7 herd, would it not?

8 A Oh, yes, any decline,
9 when you are dealing with such small numbers is
10 significant to the total herd, but I must add also,
11 there are essentially three groups on the North
12 Slope, three areas, or focal points of distribution.
13 We are talking about very small groups that we have
14 identified occupy specific geographic areas, and some
15 animals have also been found by us in the Yukon, a
16 few individual animals.

17 Q Well, I understand
18 they have actually been observed as far as Herschel
19 Island in the Yukon?

20 A That is correct. Well,
21 we have made an observation, for example, near the
22 Firth River.

23 Q Is it fair to say, though,
24 that this muskox herd was introduced with the objective
25 of having it colonize the North Slope?

26 A I think that was the
27 objective of the introduction, re-introduction, yes.

28 Q And is it also a
29 fact that muskox require snow-free areas in the
30 winter and for that reason they tend to congregate

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1 all winter on the North Coastal Slope.

2 A Well, they occur there
3 during the winter and they occur there at all seasons
4 of the year, yes.

5 Q So there is no migratory
6 behaviour, then?

7 A There are seasonal
8 movements that take place. There is no migratory
9 behaviour as in the sense of caribou, but they do
10 wander over quite large areas to different ranges,
11 and individual animals, for example, may wander
12 quite a considerable distance. We recorded one bull
13 that was apparently identifiable that traveled a
14 distance of 150 miles.

15 Q That would all be
16 within the Coastal Slope area though?

17 A We are talking essentially
18 about the northern foothills of the Brooks Range and
19 the Coastal Plain.

20 I would refer you, sir, to
21 this report where we do have some figures on page
22 48. There is a map showing this distribution and
23 the three focal centres as well as the numbers.

24 Q Mr. Jakimchuk, would
25 you also indicate what the calving season is, at
26 what time it begins, and perhaps you could relate it
27 to that of caribou so that we could have some in-
28 dication if there is a differential.

29 A Well, I am not --
30 I don't know what specific data I have on that. I

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1 do know that the calving season occurs over a longer
2 period of time. It is not as restricted, it is not
3 a two week period. I think that most calves are
4 found during May and June, but I would like to
5 check that to be more specific for you.

6 Q I would appreciate that.
7 It is my information that the calving of the musk
8 ox takes place at a much earlier date than that of the
9 caribou, and in fact starts in late April or early
10 May.

11 A Well, we have -- I can
12 give you some specific dates that include the months
13 of -- well, this is by area, so it becomes very
14 complicated. We have observations of calves in April,
15 we have observations of calves in late May, for
16 example, on the 27th of May one small new calf was
17 observed with the group in area 1, that's late May.
18 We have a reference that lists April 20th as the earliest
19 and June 24th as the latest possible dates of muskox
20 birth for captive animals.

21 Q So in other words then,
22 there is a significant difference between the muskox
23 calving and the caribou calving and the muskox calving
24 would begin as early as April 20th and go as late as
25 that date in June that you mentioned?
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1 A Yes, as I said it's
2 a much more extended calving period in time.

3 Q Now, because of that, did
4 you make a recommendation to the applicant specifically
5 relating to muskox?

6 A We made a recommendation
7 that, to avoid muskox wherever possible, whenever possible
8 because we're quite cognizant of the fact that muskox
9 can occupy the North Slope during the winter at which
10 time construction would take place, so that inter-
11 actions would be quite possible.

12 Q Well, what problems?

13 A Pardon me?

14 Q Not possible, I would
15 say the inter-action on the North Slope would be
16 possible with the ^{Porcupine}/caribou herd but it's quite likely
17 to happen with muskox, isn't it?

18 A Well, not entirely that
19 likely or a likelihood. You're talking about several
20 thousands of square miles with perhaps 40 or 50
21 muskoxen, and it's not necessarily probable that
22 those animals will be encountered. You know, there
23 is a high possibility of it.

24 Q Would you agree that
25 the risk, if they are encountered, is of greater
26 magnitude than the risk of encountering the caribou
27 simply because muskoxen, cows have been observed to
28 be much more susceptible to harassment and disturbance
29 than even the caribou cows?

30 A Well, I don't have a

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1 reference for that. We have not as a matter of fact
2 carried out specific disturbance studies on those
3 animals merely because there's such a small group of
4 them and we felt that would be an inordinate disturbance
5 in itself. I think that perhaps muskox may be some-
6 what more susceptible to aircraft disturbance than
7 caribou, but on the other hand muskox display different
8 behavioural reactions to disturbance. They display
9 much more aggressivity than caribou do in the face of
10 danger, for example, so they are not strictly comparable.

11 Q However, I would take it
12 that you would agree that because of the small numbers
13 involved and the fact that it is an introduced herd
14 and because of the different reaction, the more aggres-
15 sive reaction, that in fact greater care would have to
16 be taken with the muskox.

17 A Greater care than what?

18 Q Than for instance with
19 the Porcupine caribou herd.

20 A Well, to put this in
21 some kind of perspective, we're not dealing with the
22 last remnant herd of muskoxen in the world. As a
23 matter of fact, there are evidences of over-population
24 of muskoxen on Banks Island; there are quite significant
25 populations in other parts of Canada. We have a re-
26 introduced or transplanted herd, and my opinion is we
27 should accord them as much protection as possible but
28 we are not dealing here with a rare and endangered
29 species, and the muskoxen pose a bit of a problem
30 because we know they're there, and they occur there

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2 all year around. We have said we should do our utmost
3 to avoid them, to avoid any harassment, to avoid any
4 undue energy expenditures in the winter period, and
5 I think that's the best we can do in making recommenda-
6 tions. But there may be problems. We're going to have
7 to deal with that. That's one of those that we have to
8 deal with at the time. I know no solution at this time
9 to, you know, the fact remains they're on the North
10 Slope.

11 WITNESS BANFIELD: I may con-
12 tribute something. My experience with muskoxen is that
13 they withdraw from human contact.

14 THE COMMISSIONER: They would
15 withdraw?

16 A Withdraw, yes. The pro-
17 blem occurs if you have dogs and then the muskox
18 reaction to a dog is similar to its reaction to wolves,
19 and then they stand their ground and form a circle and
20 protect the calves; but with a slow-moving construction
21 operation my feeling is that they would withdraw on
22 their own account.

23 MR. VEALE: I understand that
24 you're basing that on judgment, Dr. Banfield, rather
25 than on any observed experiments.

26 A Well, I said I based it
27 on my own experience in trying to get close to muskoxen
28 to observe them without having a dog.

29 Q Well, you're not exactly
30 a piece of construction equipment. With all respect,

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1 I think it's a different phenomenon that we're
2 discussing. I mean am I fair in saying that? I'm trying
3 to determine whether, you know, the fact that you
4 approached a muskox herd and they went away demonstrates
5 anything.

6 A Well, with the construction
7 people there are -- with the construction equipment
8 there are people.

9 MR. MARSHALL: We're prepared
10 to concede that Dr. Banfield is smaller and makes less
11 noise than a D-9.

12 A But the impact is the
13 same.

14 MR. MARSHALL: Mr. Veale, you
15 asked about a report that had been done for the
16 Northwest Project wildlife series by Renewable Resources,
17 Volume II of the study of the Porcupine caribou herd.
18 That report was listed in our list of reports and
19 studies as No. 516, and has been in the library up-
20 stairs. I had a copy brought down, if you'd like to
21 look at it.

22 MR. VEALE: Thanks very much.

23 Q Mr. Jakimchuk, I would
24 like to deal with the recruitment of yearlings into the
25 herds. You have no difficulty with that phrase, we're
26 talking about replenishing the herd on an annual
27 basis.

28 WITNESS JAKIMCHUK: Yes sir.

29 Q Would you agree that if
30 the Porcupine caribou herd is to maintain its present

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number, which I understand ranges from 100 to 120,000,
the annual recruitment must equal the annual mortality
caused by predation, hunting, accidents, dying from old
age, these.

5 A Yes, I would, if it's to
6 maintain its current level.

7 Q Now I would also assume
8 that it would be your objective and also the objective
9 of --

10 A Sorry, may I clarify that?
11 This^{would} not necessarily have to be the case on an
12 annual basis. In other words, the herd can still main-
13 tain its numbers, even though on a given year recruit-
14 ment is less than total mortality. In other words,
15 there is some slack there.

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1 Q Fair enough. But I
2 assume that it is your objective and the objective
3 of Artic Gas to maintain approximately the present
4 herd size throughout the construction, operation,
5 maintenance and abandonment of the pipeline?

6 A Well, it is my
7 objective and I think the objective of Arctic Gas
8 not to disturb the status of that population signif-
9 icantly. I think that is the way I worded it in my
10 direct testimony. We have no real obligation, or,
11 you know, no mandate to manage the herd, but we have
12 a concern that we don't impare its status. So, when
13 you place a number, that is an objective, that is a sort
14 of a policy objective which is what governments do,
15 that is all I am clarifying.

16 Q And then Mr. Hemstock
17 wouldn't have any difficulty with that, speaking
18 for the applicant?

19 WITNESS HEMSTOCK: No, sir.

20 Q Well, Mr. Jakimchuk,
21 what, in the studies you have done, what would you
22 estimate the annual predation kill to be from the
23 Porcupine caribou herd?

24 WITNESS JAKIMCHUK: On
25 predation, we have no specific figures on that. That
26 is extremely difficult to establish without wide-
27 ranging, extensive study. It is a very difficult
28 one to establish. We could do no more than give a
29 ballpark type estimate on --

30 Q Would you give us that

1 ballpark estimate?

2 A Well, it would be in
3 the order of several thousands of animals. I believe
4 in Dr. Calif's report, the E.P.B. research reports, he
5 presents a ballpark estimate of predation and I think
6 if I recollect correctly, it was in the order of
7 5,000 to 10,000. 5,000, somewhere around there.

8 Q 5,000 to 10,000?

9 A We could check. I
10 would prefer to actually check that to be accurate --

11 Q Okay.

12 A But once again it is
13 also ballpark estimate

14 Q And what can you tell
15 us about the numbers of the annual kill by native
16 people from Fort McPherson, Aklavik, Inuvik, Old
17 Crow, the kill on the Dempster Highway, the kill at
18 Arctic Red, Arctic Village and Fort Yukon?

19 A We have throughout our
20 various annual reports on the herd, presented kill
21 estimates that we have obtained from the villages and
22 from game officers where it was possible to obtain
23 those. These vary from year to year, from village
24 to village. For example, in Old Crow, one could say
25 that 400 to 600 caribou are taken on the average.
26 It is higher in McPherson, it may range up to 1,000
27 for example.

28 There are no data available
29 as far as I am aware from some of the villages that
30 you have mentioned, such as -- no specific data -- such

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1 as Fort Yukon. I think that it would be very low
2 for Fort Yukon. The two major -- the three major
3 harvesters of that herd in terms of native villages
4 are Old Crow, Fort McPherson and Arctic Village, and
5 we have a fair idea of the harvest that is coming
6 from there.

7 In any given year I would
8 estimate in the order of 4,000 to 5,000 animals are
9 harvested for subsistence^{out} of that herd.

10 Q Now, what about the
11 factors of accidents, disease and old age? Now, is
12 there a ballpark figure for that as well?

13 A We have no specific
14 data and it would be very difficult to put a ballpark
15 on that. I would have to do some calculations and
16 I would require some additional data before I could
17 do that for the herd.

18 Q You mean additional
19 research or data that you have somewhere else?

20 A Well, much of that is
21 contingent upon the age and sex structure of the
22 population. We know that caribou, for example, their
23 longevity is approximately twelve years, but we
24 don't have ages of specific -- or we don't have specific
25 age composition by year for that population, therefore
26 it requires once again a massive type study, such as
27 the Canadian Wildlife Service did on the Kaminuriak
28 herd to establish that information.

29 Q I don't wish to press you
30 on it, but can you say whether it is in the order of

1,000 or in the order of 10,000 at this point?

2 A From -- and you are
3 talking about accidents, old age and disease? I
4 think it probably falls somewhere between those two
5 ranges.

6 Q Okay. Now, am I
7 correct in stating that in the recruitment of yearlings,
8 the Porcupine caribou herd is considered to have what
9 I would call a normal upper limit of 13%?

10 A Well, this varies on an
11 annual basis.

12 Q Well, it would vary
13 between, say, 9% in a low year and maybe an exceptional
14 year of 25%, is that correct?

15 A We have not documented
16 anything over 25%. I think our highest was 18%.

17 Q I see, okay.

18 A And I would have to
19 check, you know, for example, current year's data
20 to see what that is. We don't have that worked up
21 yet, I might add.

22 Q I am sorry, you
23 don't have what worked up yet?

24 A The data for the current
25 -- you know, the report for our recent surveys, like
26 last summer, is not complete yet.

27 0 Last summer's survey?

28 A Yes.

29 Q I see. Would you agree
30 though, if we take the figures of 9% and 18%, would you

1 agree that there is a normal upper limit that ranges
2 around 13%?

3 A I wouldn't like to be
4 hung on that particular figure --

5 Q In that range?

6 A It is within that
7 range, somewhere within that range. Why don't we
8 say within the range of 10% to 20%?

9 Q Okay. Now, if we
10 extrapolate that once again and you take the range
11 of 10% to 20%, what does that -- what could we average
12 that out in a year? We are taking, say, from 10% to
13 20% of a figure of from 100 to 120,000. Now, what
14 are we looking at? I would suggest to you that it is
15 a figure ranging from 9,000 to 15,000 calves, is
16 that --

17 A Well, you were just
18 talking about yearlings, and now you are talking
19 about calves.

20 Q Okay, I am sorry. We
21 will continue to talk about yearlings and that is
22 what I mean. I am not referring to calves.

23 A Okay. Yearlings are
24 that cohort of the population, that segment of the
25 population that have survived from the calves through
26 the various mortalities and are in fact a part of the
27 population.

28 Q Right. That is why
29 it is important to talk about yearlings as opposed to
30 calves because, would you agree with the figures --

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1 THE COMMISSIONER: Could I
2 interrupt you, Mr. Veale, just to make sure that I
3 understand this. You told us the other day that about
4 60% of the cows were fertilized, as I recall.

5 A No, I was saying -- we
6 were talking about ratios, Mr. Commissioner, immediately
7 following calving, and that, for example, last year,
8 for every hundred cows there were 66 calves produced.
9 That is not fertilization, that is birth.

10 Q Well, then the key
11 thing here is how many of those 66 survive?

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1 A That's the key thing to
2 the population, and we're now talking about when you
3 count yearling animals, those are from the previous
4 year's calf crop that have survived over the winter
5 and are now part --

6 THE COMMISSIONER: Part of
7 the herd.

8 A -- part of the herd.

9 Q And you didn't -- I was
10 going to ask you then but I guess Mr. Veale is getting
11 at it now, because of the harsh conditions under which
12 this herd lives, there is a very high mortality rate
13 among those 60 calves per 100 cows.

14 A Yes. As a matter of fact
15 mortality in most wild populations of ungulates is
16 greatest in the first year of life, from the time of
17 birth.

18 THE COMMISSIONER: Sorry, Mr.
19 Veale. I just wanted to understand where we were at.

20 MR. VEALE: Q Well, Mr.
21 Jakimchuk, getting back then to the annual recruitment
22 of yearlings, I am suggesting to you that the normal
23 annual recruitment ranges from 9,000 to 15,000 yearlings.
24 Do you agree or do you wish to qualify that?

25 A I don't know really what
26 you mean by "normal". Normal for the period that we've
27 looked at them?

28 Q Well, your research is
29 over a period of four years, I understand.

30 A That's correct.

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1 Q Now, is that an average
2 annual recruitment? Is it somewhere in those figures?

3 A It may be higher than
4 15% in some years.

5 Q I'm not now talking about
6 percentages, but gross figures. I've talked from 9,000
7 to 15,000. I'm trying to take it out now of percentages
8 and put it into something we can relate to herd size.

9 A Well, we're starting to
10 get into a complicated thing here. The absolute
11 numbers, of course, vary from spring to fall. When
12 you're talking about percentages you have to distinguish
13 between percentages of the herd before calving and
14 then after calving because that changes, because total
15 numbers change. So that are you asking me about what
16 the situation is in the spring, or what the situation
17 is in the summer or in the fall?

18 Q Well, if it's illuminating
19 perhaps you can tell us both. I'm not concerned about
20 that. What I'm concerned about is getting some rough
21 estimates of what we're dealing with in the Porcupine
22 caribou herd.

23 A Well, we have not calcula-
24 ted or we have not counted absolutely numbers of
25 yearlings. We have done it on a percentage basis based
26 on ground counts, and we have only done that in the
27 spring on one year. Our subsequent counts have been
28 carried out during the post-calving aggregation where
29 we are also end up with percentage figures and then
30 extrapolate from those.

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Veale

1 Q So you've only taken then,
2 there's only been one year in which you've actually
3 researched the annual recruitment of yearlings. Is
4 that correct?

5 A No, that's not
6 correct. There's only one year we've done it in the
7 springtime.

8 Q O.K., and what were your
9 results in that year? Which year was it?

10 A It was in 1971.

11 Q That was the first year
12 you looked at the herd.

13 A That's correct, where
14 we did that from the ground.

15 Q I see, and what were your
16 results?

17 A We had quite a high
18 proportion of yearlings in the herd, and I think it was
19 in the order of 18%.

20 Q So that's your high level
21 then.

22 A Yes, it was what we felt
23 was a high level.

24 Q O.K. now, you haven't
25 done that since, is that correct?

26 A Not in the springtime,
27 but we have data on the yearling composition from this.
28 As I say, we concentrated on doing our composition
29 counts on the post-calving aggregation and we have
30 data at that time for subsequent years.

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Veale

1 Q I see, and what does
2 that indicate?

3 A I don't have the exact
4 figure in my head right now. I would have to check
5 that and come back with those.

6 Q Would you check that for
7 us then?

8 A O.K.

9 MR. MARSHALL: Would you just
10 repeat that so I can make a note of it?

11 MR. VEALE: Mr. Jakimchuk
12 is going to check the data they have on the annual
13 recruitment of yearlings following the post-calving
14 aggregation. Is that correct, Mr. Jakimchuk?

15 A I was going to give
16 you the figures on the yearlings as a percentage of
17 the herd.

18 Q Now, while you're doing
19 that, do you have to go back and check to tell us about
20 the figures you have for the fall, or is that some-
21 thing you have more information about right now?

22 A We don't have any fall
23 figures that we have generated ourselves. I think there
24 are some fall data that may be available in the E.P.B.
25 research report, but I can, for example these figures
26 I can obtain this morning. I don't have to go away
27 for a long period of time.

28 Q O.K. If I've got it
29 properly then, your own baseline data research relates
30 to the spring of 1971, and then the following years

Banfield, Gunn, Hemstock

McCart, Jakimchuk
Cross-Exam by Veale

1
2 after the post-calving aggregations, with respect to
3 annual recruitment of yearlings.

4 A During the post-calving
5 aggregation and immediately following.

6 Q Now, I would also ask
7 you when you go away presumably at the coffee break to
8 come up with a rough figure, and you can use either
9 a gross figure or a percentage figure to indicate
10 what that herd has to regenerate in order to meet the
11 losses to the herd as a result of the killing, the
12 old age dying, disease and accident. Now I appreciate
13 all the qualifications you will wish to put on those
14 figures because you really haven't done a full research
15 to come up with some accuracy. But would you be able
16 to do that for us?

17 A I could give you an
18 estimate, I think.

19 Q Now, Dr. Banfield,ⁱⁿ your
20 evidence yesterday you informed us that in your opinion
21 the wintering ground is more critical than the calving
22 ground. Is that correct?

23 WITNESS BANFIELD: Yes sir.

24 Q You also advised us that
25 you gave evidence at what I will refer to as the James
26 Bay trial, that because approximately five to 10% of
27 a caribou wintering range was going to be flooded as
28 a result of that project, that the result could be a
29 reduction in the herd of 5 to 10%. Is that correct?

30 A Yes sir. You will note

Banfield, Gunn, Hemstock
McCart, Jakimchuk
CrossExam by Veale

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the consistency between the two quotations you have made.

Q Now I would like to deal with the Porcupine caribou herd winter range and its relationship to the Dempster Highway. Now I've asked that the map be placed on the wall behind you and we can use that map. It's not very well lighted, but I've taken a look at the Biological Report series, Volume 4 and the first map in that volume, Mr. Jakimchuk, which has your 1971 wintering grounds, specifically making reference to the Ogilvie group, the central group, the Trevor Range and Bonnet Plume group.

WITNESS JAKIMCHUK: Yes, I have that map.

Q Now --

THE COMMISSIONER: Excuse me, what volume is that?

MR. VEALE: That's Volume 4.

THE COMMISSIONER: Volume 4. Can I have that, Miss Hutchinson, Volume 4 of the Biological Report series?

MR. VEALE: That's just next to page 18.

Q Mr. Jakimchuk, perhaps you are most familiar with this map as you probably were involved in the preparation of it. From my observation of the map, if we take the northerly point of the central group, I would say that approximates the 66th degree northern latitude.

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Veal.

1 A I notice we don't
2 have the latitudes on here.

3 Q But you do, actually.

4 A Oh, where? I can't
5 see them.

6 Q Well, you can find the
7 67 one right in the middle of the page.

8 A Okay, okay.

9 Q So we are looking at a
10 little north of the 66th degree --

11 THE COMMISSIONER: Well,
12 let me just catch up with you here. The central
13 group, most northerly migration, is to this sort
14 of railway track across the Mackenzie Bay, which is --
15 is that the 60th parallel, or whatever -- 67th, 66th?

16 MR. VEALE: No, the
17 66th relates to -- there is a circle around that
18 central group. Now, the north --

19 THE COMMISSIONER: Oh, you
20 are down there -- Yes, I see.

21 MR. SCOTT: Dr. Banfield
22 I think has got his finger on it.

23 A We are looking at the
24 wintering distribution.

25 THE COMMISSIONER: Yes, not
26 those arrows --

27 A -- in that year.

28 THE COMMISSIONER: Yes.
29 Okay.

30 MR. VEAL: Thank you, Dr.

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Cross-Exam by Veale

1 Banfield, if you would stay there and point out another
2 one.

3 The southerly portion of that
4 range, as I understand it, would be at the 63rd degree
5 northerly latitude?

6 That would be the southern
7 tip of the Trevor Ranges and Bonnet Plume group?

8 A Yes, you will also
9 notice there, incidentally, that for that par-
10 ticular group we have a dotted line at the bottom
11 which indicates that we have not got a discreet
12 boundary.

13 Q It may go to Whitehorse,
14 you mean?

15 A Well, it may go south
16 of there.

17 Q So, we can only then
18 approximate that the 63rd degree northern latitude
19 is approximate?

20 A That is where we found
21 most of the evidence.

22 Q I would take it that
23 you really haven't found any evidence of caribou
24 south of the Peel River and the Snake River?

25 A Well, yes, that group
26 there is south of the Peel River. You know, it
27 involves the tributaries of the Peel and the Bonnet
28 Plume, you know, the Blackstone and Wind River and
29 others in the area. I just don't remember the Snake
30 River offhand.

1 Q To be fair then, perhaps
2 we should leave it that no one knows southern limits?

3 A Well, don't forget that
4 we are looking at the 1971 distribution and map, and
5 this varies annually. It is varied from year to
6 year. There is wintering in Alaska where the southern
7 and northern limits are known and we have data on
8 subsequent years as to these limits in the Biological
9 Report Series. But in that year, in 1971, when the '
10 ranges were delineated, on the, south of the Peel
11 River, we did not have defined the most southerly
12 limits,

13 Q Now, Mr. Jakimchuk, on
14 the map that we are referring to in the Biological
15 Report Series, there are figures for each one of
16 these groups. The Ogilvy group is 12,000 plus. The
17 Central group is 30,00 plus, and the Trev or Range,
18 Bonnet Plume group is 15,000 plus.

19 Now, my simple arithmetic
20 indicates that the total there is 57,000.

21 A My simple arithmetic
22 indicates the same.

23 Q Now, Dr. Banfield, getting
24 back to your statement yesterday. I gather that you
25 would agree that the wintering range area between
26 the two latitudes, 63 and 66, is crucial to the
27 maintenance of the Porcupine caribou herd?

28 WITNESS BANFIELD: And also
29 an area in Alaska as well which I think accounts for
30 some of this missing --

1 Q Is that fair enough --

2 A -- number --

3 Q Right.

4 A Yes.

5 Q Thank you.

6 Now, on the map on the

7 wall, the Dempster Highway is represented by the
8 Mackenzie Delta line which connects to the Fort Yukon
9 Corridor. Now, I take it, would it be a fair represent-
10 ation to say that better than one-half of the wintering
11 range that we have just been discussing is bisected or
12 crossed by the Dempster? Would you agree with that,
13 Dr. Banfield?

14 A Yes, it appears so.

15 Q Now, if that range south-
16 east of the Dempster Highway is cut off from the Porcupine
17 caribou herd that winters there in any given year, would
18 you agree that that loss of winter range could have a
19 significant impact on the wellbeing of the Porcupine
20 caribou herd?

21 WITNESS JAKIMCHUK: Are you
22 asking me or Dr. Banfield?

23 Q No, Dr. Banfield, thank
24 you.

25 WITNESS BANFIELD: I am trying
26 to closely follow your phraseology, Mr. Veale, yes,
27 I agree with you .

28 THE COMMISSIONER: If they
29 are cut off, that is the key thing.

30 MR. VEALE: And I assume then

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Veale

1 that it follows that we could conservatively say
2 that one-half or greater of that 57,000, whatever that
3 figure is, and that comes out to, say, 28,000 to
4 30,000, the Porcupine caribou herd could potentially
5 be reduced by that number?

6 WITNESS JAKIMCHUK: I have
7 to interject here, if I may. I do not believe that
8 that type of correlation follows, because we are
9 talking about a one-year's distribution and in
10 my direct testimony I have discussed the variability
11 of winter distribution and winter range utilization
12 of caribou in general and in the Porcupine herd
13 in particular. For example, we have years documented
14 where the entire herd has wintered further north
15 than is displayed on this map here, so we should not
16 construe these areas that are marked as the winter
17 range. It is variable. Some years, virtually the
18 entire herd will winter in the Alaska, in the Chandalar
19 River drainage. Other years as, it appears may be
20 happening this year, much of the herd is going to
21 winter again, perhaps similar to this map, so it is
22 a variable thing, and just because the herd does not
23 winter specifically in these areas delineated does
24 not mean that it is going to be damaged.

25 Q No, fair enough, however
26 you would agree with me in that snow conditions and
27 various factors determine where the herd goes, and
28 that if it is determined in one year that that is
29 what a significant proportion of the herd wishes
30 to do, that were that cut off to them, that could have

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Veale

1 serious repercussions?

2 A If it were cut off and
3 there were no alternatives available, it could
4 have serious repercussions.

5 Q Well, Dr. Banfield,
6 getting back to the type of evidence that you gave
7 at James Bay trial, if we took the Dempster Highway
8 and considered it complete. I mean, there is
9 barely fifty miles left to complete, to get up to
10 McPherson at this time. Now, if we just extend that
11 fifty miles and say, okay, it is complete now, and if
12 we add, taking the position that there are no
13 mitigative measures taken by the Territorial government,
14 the Federal government, or any Game authority, and
15 unrestricted access and heavy vehicular use is used,
16 you would agree with me then that it is a realistic
17 possibility, that the herd that wished to use that
18 area in a particular year, as I have discussed with
19 Mr. Jakimchuk, could be reduced by one half?

20 WITNESS BANFIELD: Well, I
21 was listening, Mr. Veale, when you were talking
22 generalities, and then you threw in one-half that
23 was the --

24 Q Well, that's my figure,
25 and if you wish to use a different figure, feel
26 free.

27 A Well, just can you tell
28 me how you arrived at this one-half?

29 Q Well, I have just
30 taken that as a conservative figure of how much of the

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Veale

1 particular winter range we were discussing in 1971,
2 would be unavailable.

3 A This is this combination
4 of disturbances --

5 Q Well, it is not a com-
6 bination that I -- well, it is a combination of
7 disturbances on the Dempster Highway. I am not even
8 entering the pipeline into that discussion.

9 A Well, I hesitate. I
10 just can't do the mathematics in my mind with the --
11 I am thinking of the various variables, as to whether,
12 what number will normally go east, southeast of the
13 Dempster that year and want to migrate across it
14 northwesterly, and there are so many variables. I
15 would tend to say that I wouldn't want to give a
16 figure, but I would say that there was a risk of a
17 significant interference with the normal wintering
18 distribution or occupation in the normal winter range
19 under the conditions you mentioned, that is, uncontrolled
20 access and traffic on the highway.

21 I also toss in one more
22 bit of information, that is the evidence that Dr.
23 Kline has already described of the effect of a
24 roadway crossing the winter range in Norway which
25 would be very much like this, and the wild reindeer
26 of Norway eventually abandoned the isolated smaller
27 part of their winter range. I think it is --

28

29

30

Banfield, Gunn, Hemstock
McC art, Jakimchuk
Cross-Exam by Veale

1 THE COMMISSIONER: Excuse me,
2 that lay on the other side of the roadway?

3 A Yes. I think it's
4 a significant concern but I also feel it would not
5 happen in one year.

6 MR. VEALE: No, fair enough.

7 Q As you can see, I'm
8 interested in drawing an analogy between the evidence
9 you gave at the James Bay trial where there was a clear-
10 cut cutoff of a range, and the situation we're in
11 with the Dempster Highway where the cutoff of the range
12 may not be as sudden and final, but over a period of
13 years the same effect could result.

14 A Yes, thank you. That's
15 exactly what was going on in my mind. I didn't think
16 it was a direct comparison.

17 THE COMMISSIONER: Could I
18 just ask you something, Dr. Banfield?

19 Q That herd now, the
20 presence of man imposes a limited pressure on the
21 herd in that Old Crow, McPherson, to a lesser extent
22 Aklavik, and I gather Arctic Village in Alaska take
23 so many animals each year and the figure we were given
24 earlier on in the hearings was I think 2,500, some-
25 thing like that, altogether. The herd can tolerate
26 the taking of 2,500 animals a year apparently by the
27 native people who are taking them to supplement their
28 diet and so forth. Now, you're going to have this
29 highway completed through there. You say that the
30 highway itself without vehicular traffic of any kind

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Veale

1 without even the presence of man along the highway
2 will impose an obstacle, that given the Norwegian
3 experience, might result in the loss of some winter
4 range.

5 A No sir, not by itself.
6 The experience in Norway was of course including
7 vehicular traffic, and access and hunting. Access,
8 I'm sorry, these are -- I would not want to mention
9 hunting until I reviewed that paper.

10 Q Well at any rate, the
11 only pressure on that herd, owing to the presence of
12 man so far has been the taking of a number of animals
13 each year by the native people in Alaska and the
14 Yukon and the Northwest Territories.

15 WITNESS JAKIMCHUK: That's
16 no longer the situation, sir. There is sport hunting
17 taking place off the Dempster Highway of those
18 portions completed.

19 Q Sport hunting is now
20 taking place off the Dempster. I was just going to say
21 the second source of pressure now is the highway, and
22 when it is completed you gentlemen are obviously
23 fearful that that pressure will mount severely, and
24 Mr. Jakimchuk was good enough yesterday to suggest
25 a number of measures that should be considered by the
26 Government of the Yukon. Then the next source of
27 pressure, be it minor or considerable, will be pipeline
28 construction along the coast, and --

29 A Well, may I add a point
30 of clarification?

Banfield, Gunn, Hemstock
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Cross-Exam by Veale

1 Q Yes, certainly.

2 A Sir, there are other
3 activities that are going on and have been going on
4 in the range of the herd. Seismic camps and seismic
5 activity south of the Village of Old Crow and the
6 Eagle Plains area, for example. Last July, for example,
7 I saw a bulldozer in the middle of a tributary stream
8 adjacent to the Firth River involved in a gold-mining
9 operation.

10 MR. VEALE: I think the
11 Commissioner witnessed that as well, Mr. Jakimchuk.

12 THE COMMISSIONER: I saw that
13 too.

14 A Sheep Creek.

15 THE COMMISSIONER: Right.
16 Well, carry on, I was just trying to make sure I
17 understood this.

18 MR. VEALE: Just as a point of
19 interest, Mr. Commissioner, perhaps Mr. Jakimchuk could
20 confirm my information from the Game Branch of the
21 Yukon Territory that the sports kill is very insignifi-
22 cant and mainly because the sportsmen have difficulty
23 in finding the herd because they stand at the side of
24 the Dempster Highway and it's very difficult, and I
25 don't think it amounts to any -- it amounts to less than
26 100 caribou a year.

27 Q Is that fair?

28 A I can't confirm that
29 because I don't have any figures.

30 Q you've never discussed

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Veale

1 that with the Territorial Game Branch?

2 A We have discussed, I
3 think at a very early stage in our studies we suggested
4 that very close tabs be kept on that kill, and it was
5 my impression from an earlier discussion with some
6 biologist, I can't recall exactly, in that particular
7 year I think it would be '71, that there were 500
8 animals killed. Now this is going to vary.

9 Q With the wintering range?

10 A Yes, and this is going
11 to-- that's 500 from the Dempster. This is going to
12 vary, depending on if the caribou winter in that area,
13 depending on a number of things. But the data should
14 be in the Game Branch Office. I can't confirm their
15 data.

16 Q Mr. Jakimchuk, in your
17 supplementary evidence you have listed a total of
18 10 disadvantages for the interior route with respect
19 to caribou migration.

20 A I haven't totalled them
21 up so I would like to get that.

22 Q It's on page 17 of --

23 THE COMMISSIONER: That was
24 Mr. Jakimchuk's extra paper, wasn't it?

25 MR. VEALE: Yes, it is.

26 A I see it, yes.

27 Q So you confirm that there
28 are 10? Would you agree with me that from your
29 perspective, that is with mammals, that the Fairbanks
30 corridor would be a more appropriate alternative route

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Veale

1
2 assuming that there was no Mackenzie Delta lateral
3 coming through the Dempster?

4 A A more appropriate route
5 from the standpoint of mammals? If you assume no
6 lateral coming from the delta down the Dempster
7 Highway, and if you assume that good environmental
8 measures would be applied in the building of the
9 Fairbanks Pipeline, and if you assume that it followed
10 precisely the routing of the oil pipeline, it would
11 have advantages from the standpoint of mammals.

12 THE COMMISSIONER: Well, the
13 great advantage it would have, so far as we are
14 concerned, discussing this herd, is that it wouldn't
15 impinge on this herd in any way.

16 A Well, that's quite clear.
17 Mr. Veale asked me about mammals in general.

18 THE COMMISSIONER: Oh, yes.

19 MR. VEALE: Q So it would be
20 an even stronger issue if you just looked at the
21 Porcupine caribou herd, is what you're saying, if
22 you throw the entire mammal situation you don't say it
23 quite as forcefully, is that what you're saying, Mr.
24 Jakimchuk?

25 A Well, on the assumptions
26 that you gave me, and I stated, I think there is one
27 disadvantage, and that is it's longer. So that impacts
28 you know, the site specific impacts are more extensive
29 in nature. But by and large, if you omit the various
30 laterals it's somewhat more advantageous.

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McCart, Jakimchuk
Cross-Exam by Veale

1
2 Q Now, I would just like
3 to discuss two additions to the ten disadvantages that
4 you have, and you may already have implicitly covered
5 them in those ten, and say so if you have; but Mr.
6 Dabbs indicated several days ago that there was the
7 trampling effect and particularly he indicated with
8 respect to the interior routing, where there would be
9 an opening in the small forest that does exist there.
10 So that would you agree that we could add that to your
11 list of disadvantages?

12 A It's not one of the most
13 major concerns but I would expect that it was more
14 significant on the interior than on the coastal because
15 there is a lot more, a greater number of movements on
16 that interior routing. But I don't consider it to be
17 a key thing.

18 Q What about you, Dr.
19 Banfield? I was just looking at a reference in a
20 paper you gave in that 1971 Seminar in Europe, and you
21 went on and discussed that. I could read back the
22 reference to you, but you were concerned about the
23 trampling effect at that time.

24 WITNESS BANFIELD: Yes,
25 I was smiling myself because I thought you were probably
26 reaching for my paper. At that time -- my embar-
27 rassment now about that paper is that by the time
28 that symposium was published, my particular paper was
29 badly out of date. That was -- paper was presented
30 at a time when I think I indicated that these were the

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Veale

1
2 areas that we were going to research. We were concerned
3 about whether caribou would be diverted from their
4 normal migration paths by the right-of-way, and the
5 evidence presented at this time, Renewable Resources
6 Research and the direct testimony of Mr. Jakimchuk
7 has indicated that that research has been conducted and
8 we now have quantified results from it.
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Banfield, Gunn, Hemstock
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Q I see. The --

THE COMMISSIONER: Well, would you let me interrupt for a minute? What do you conclude from those quantified results? What is your conclusion on that very issue?

A Well, on that very issue I concluded that what I voiced as a concern is not as great a concern as I had speculated that it would be, that unless the cleared path that the caribou met was actually parallel, or within, I believe, it's 15 degrees, of their intended line of route, they will not follow it. They will break off and go in the direction which they were intended.

THE COMMISSIONER: They will cross it?

A They will cross it, yes. They will follow it for some time and then cross over.

MR. VEALE: Well, did you say 15 degrees?

A Well --

Q I am just referring now, I am just referring to page four of Mr. Jakimchuk's evidence in which he indicated that they have --

A 45 degrees in his evidence I believe --

Q That's right.

THE COMMISSIONER: Yes.

A Well, why I used 15 was that I was aware of earlier research and figures and

when these reached final reporting to be more significant.

I hate to use this word, but Mr. Bayly is sitting down --

no, the figures were changed from smaller degrees,

such as 15 to a larger degree, 45, and then the

data presented was in that area.

MR. VEALE: In your paper,

Dr. Banfield, you made reference to the research that

was being conducted, and at page 802 of that volume

you said:

"For these reasons we plan to conduct experiments

on existing seismic lines by placing several

snow fence barriers across the lines hoping

to discourage their usage."

Now, have in fact experiments of that nature been

conducted, Mr. Jakimchuk?

WITNESS JAKIMCHUK: In the

1972 -- in the late winter and the spring migratory

period we endeavoured to, we did conduct an experiment,

and it was not greatly successful, I might add. It is

very difficult to find caribou when they are on the

move, on a seismic line, erect a snow fence and

see what happens when they encounter it; and as a

consequence we do not have voluminous quantitative

data of what happened. . What happened is we did

erect a snow fence across a seismic line. The caribou

came up and went around it and we reported that ob-

servation in our Biological Report Series, but it is

not the most sophisticated piece of research we have

ever done.

Q Just to follow up your

1 paper, Dr. Banfield, I note that you concluded with
2 this statement:

3 "It is encouraging, however, to see industry,
4 goverment, and conservation groups working
5 together to plan the harvest of petroleum
6 resources without causing irreparable
7 damage to the fragile Arctic and sub-Arctic
8 terrestrial ecosystems."

9 I couldn't resist that.

10 WITNESS BANFIELD: A
11 touche, monsieur.

12 Q Now, while we are on
13 the subject.

14 MR. SCOTT: Are you going
15 to ask him about that? You read it, I would like t o
16 hear what he says about that.

17 MR. VEALE: Well, Dr.
18 Banfield, perhaps you wish to comment on it. I
19 assume you are embarrassed once again.

20 A Well, I have a general
21 comment I think, referring to all professional people.
22 You know, if you never change your mind, or you
23 never read anything and you stick with what you
24 learned at high school or university, that types
25 you as one type of professional, but if in fact you
26 can absorb new ideas and keep up to date with the
27 professional literature in your field, I think that is
28 generally accepted as a better type of professional.
29 You are reading from something I prepared, I think it
30 was in 1971 --

Banfield, Gunn, Hemstock
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Q That is right.

A I don't hold that viewpoint at all. I am very ashamed of what I wrote.

Q Well, Dr. Banfield --

THE COMMISSIONER: From embarrassment to shame, what else have you got?

WITNESS HEMSTOCK: I might add to that Arctic Gas has paid for his education.

MR. VEALE: Seriously, though, Dr. Banfield --

WITNESS BANFIELD: That's what you get for writing cliches.

MR. VEALE: On a serious note, Dr. Banfield, I think that is a fear that I would express with the evidence of all experts at the Inquiry, and that is in 1980 you might come back and say, "Oh, I found what I said about the caribou really embarrassing because what has come to light has indicated that I was erroneous." Do you have nightmares about that too?

A I didn't sleep very well last night as a matter of fact. I have been reading the transcript this morning.

Well, I don't claim to be infallible. I have to make value judgments on the best information at hand. Somebody had previously mentioned that this subject is controversial. I guess that is a fair statement, but generally I see in

1 the progress of science that changes are made or there
2 are adaptations, refinements of theory and principle,
3 but usually these are modifications of an earlier
4 viewpoint. I don't see that too often science flips
5 back to a viewpoint that was held completely prior
6 to the last viewpoint. Have I made myself clear?
7 I think it is a progression, but usually a development
8 from the last viewpoint, not a flip back to accepting
9 a viewpoint that had been rejected before.

10 THE COMMISSIONER: The
11 pendulum never swings all the way back.

12 A Maybe that is it,
13 sir.

14 MR. VEALE: To take an
15 example of that, sir, I understand that the
16 Bergerud paper that has been referred to in the
17 proceedings so far, is one that has shed new light,
18 or at least offered a new theory on the reasons and
19 the causes of declines, and in the old days, maybe
20 back in the '50's and '60's, people speculated that
21 it was, oh, lack of winter food --

22 WITNESS JAKIMCHUK: Correction,
23 that is not the paper that has been offered to the
24 Inquiry. You have just referred to another paper
25 by Bergerud published in the Journal of Wildlife
26 Management, I believe, in 1974. It is an even more
27 recent one than I refer to in the Ungulate Symposium.

28 Q Thank you, Mr.
29 Jakimchuk. But as I understand that paper, it
30 does offer a new theme relating to declines and it

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1 has been speculated that it has been, oh, loss of
2 winter range and disease and so on. Now, he, Bergerud
3 I understand now has taken the position that the
4 major problem, and the most likely reason is now
5 human activity and that might be vehicular traffic or
6 killing or whatever? Is that accurate, or --?

7 A No, he was quite clear
8 in his analysis that he had attributed major
9 declines to hunting and predation by wolves.

10 Q By wolves?

11 A That is what he ended
12 up with, but he specifically discussed hunting rather
13 than human activity, or a wide range of human activities
14 per se.

15 Q So he never brought
16 human activity into the equation, is that what you
17 are saying?

18 A Oh, he discussed
19 human activity, but his conclusions related to mortality
20 owing to hunting or harvest and wolf predation.

21 Q So it would be human
22 activity in the form of hunting, and wolf predation?

23 A Well, that's --yes,
24 hunting is a human activity.

25 Q Whereas Dr. Banfield
26 in 1950 may have written a paper or appeared at a
27 symposium and given different reasons, is that right,
28 Dr. Banfield?

29 WITNESS BANFIELD: The
30 basic argument or discussion or argument between Dr.

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1 Bergerud and formerly my view and I have kind of
2 retired as a gladiator and my views are now held
3 I believe by Dr. Scotter and more previously by
4 Dr. Kelsall. We thought that and we held that
5 forest fires were a very important factor in caribou
6 diminutions or declines and Mr. Bergerud does not
7 agree with us on that and he is very strongly opposed
8 to that viewpoint.

9 The last time we debated this
10 in public, I believe, is the symposium you mentioned
11 and it was there Dr. Scotter was holding up the
12 flag of our side that believed that caribou are
13 denizens of climax of forest and Mr. Bergerud was
14 strongly disagreeing.

15 Q Well, I agree that
16 you are no longer a gladiator in the forefront, but
17 where do you stand now on that issue?

18 A Well, I still believe
19 that our viewpoint is important, but I am willing
20 to back off a bit. I think perhaps we over emphasized
21 the importance of forest fires. In 1950 I wrote that
22 caribou never crossed old burns and one should
23 never write these sorts of statements because Mr.
24 Bergerud immediately published pictures of caribou
25 trails across old burns, so I would retreat from
26 being so strongly attached to that theory.

27 Q Mr. Jakimchuk, I under-
28 stand that Renewable Resources in its studies have
29 made observations of the use of a large fire burn
30 area over near McPherson or associated with the Peel
River and that in fact your evidence would indicate that
they even winter on burn areas, is that correct?

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1 WITNESS JAKIMCHUK: I don't
2 really recall specifically what you're referring to
3 in our report.

4 Q It's not a reference
5 from your report. I was advised by John Russell, who
6 was one of your researchers.

7 A Yes.

8 Q He advised me that there
9 was this large fireburned area which was actively
10 used as a wintering ground.

11 A It depends. We've seen
12 both observations. We've seen caribou avoiding recent
13 burns, for example; but older burns, particularly where
14 the fire was not very hot, and there was not a great
15 deal of damage, have been utilized by caribou, yes.

16 Q Well, do you agree with
17 Bergerud then on that issue?

18 A On what issue?

19 Q The one I've been discuss-
20 ing with Dr. Banfield for the last few minutes?

21 A I find Dr. Bergerud
22 to be a most compelling researcher in his arguments.
23 I think he's made some very astute analyses of data
24 and I have found that I generally concur with his
25 conclusions.

26 Q Not having been a glatia-
27 tor in the 1950's you don't have any skeletons to
28 worry about.

29 A Well, I've raised the
30 hackles of people like Dr. Scott in the past in a

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1 friendly fashion. But I've not nearly the gladatorial
2 experience of Dr. Banfield.

3 THE COMMISSIONER: Well, I
4 think we'll adjourn for coffee on that note.

5 (PROCEEDINGS ADJOURNED FOR A FEW MINUTES)

6 (PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

7 MR. VEALE: Ready to go, Mr.
8 Commissioner?

9 THE COMMISSIONER: Yes, yes,
10 by all means.

11 MR. VEALE: Q Mr. Jakimchuk,
12 getting back to the ten disadvantages, we discussed
13 the matter of trampling and what I would like to suggest
14 now is one other disadvantage, and it's not dissimilar
15 from the one you've mentioned already, I guess it
16 would be No. 1, in that it crosses the migratory paths
17 of spring and fall migration, and you would agree,
18 I presume, that the timing of spring migration is very
19 critical and any delay could result in a high mortality
20 of calves.

21 WITNESS JAKIMCHUK: I would
22 be very concerned about a delay of spring migration,
23 yes, and that could result in a high mortality of calves.
24 We have some scattered documentation of that type of
25 thing happening in the literature where caribou have
26 been blocked by excessive snow depth.

27 Q And that, I presume, would
28 be one of your major concerns about the interior route.
29 Is that right?

30 A Yes, that is a concern

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1 given that conditions would exist that could block
2 the migration, yes.

3 Q Well, given that that
4 condition could arise in that snow depth could create
5 difficulties, would you go as far as to say that the
6 interior route from the Porcupine caribou herd perspec-
7 tive alone is really not an acceptable alternative.

8 A I think it's undesirable
9 from the standpoint of the Porcupine caribou herd.

10 Q Now, turning to page
11 4 of your supplementary evidence, you've listed there
12 numbers 4 and 5, and No. 4 states that one of the
13 results of your experiments is that caribou
14 encountering a cleared seismic line or winter road
15 will not be deflected if the angle of approach is
16 greater than 45 degrees. Now, I suggest that there
17 must be some assumptions within that statement, and
18 I suggest that that statement would not hold true
19 in all conditions, and particularly relating to snow
20 conditions. So perhaps you could comment on that
21 and perhaps you could indicate the snow conditions
22 and the terrain conditions in that particular report
23 or experiment that led you to that conclusion.

24 A I don't recall the actual
25 -- if you're asking me about snow depth, it is reported
26 in Volume 5 where our report on these 1972 studies, and
27 considerable data were collected not only on snow
28 depth but snow characteristics, sinking depth, hardness
29 and so on, and under the conditions that we studied,
30 which are described in that report, those were our

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1 findings.

2 Q Well, I'm suggesting that
3 it's very critical that we know the snow and terrain
4 conditions of tha t study, and I'm suggesting that
5 if the study had different snow and terrain conditions
6 the result may be different, so would it be possible for
7 you to, during the lunch break, to take a look at that
8 Volume 5 and tell me the precise snow conditions that
9 existed in that particular experiment?

10 A By "snow conditions"
11 do you mean snow depth?

12 Q Well, that would be one
13 of them, certainly, a very important one. But there
14 may be others as well.

15 A O.K.

16 Q Now, perhaps so that we
17 don't deal exclusively with No. 4, I suggest that No. 5
18 -- that conclusion that winter roads with prior
19 vehicular traffic are preferentially utilized by
20 caribou, I would also ask for similar comments on
21 the studies that you did there and the terrain and
22 snow conditions as well.

23 A They would be similar
24 because the studies were done at the same time in the
25 same general area.

26 Q I see, O.K., that would
27 solve that problem then. Now, I also understand from
28 your evidence that it is your considered opinion that
29 migration and particularly spring migration is, to use
30 your words, "the weakest link in the chain." Is that
correct?

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1 A That's the conclusion I
2 reached when I made that analysis, yes.

3 Q Now, in discussing the
4 interior route, I haven't heard from you or seen in your
5 evidence any indication of the recommendations that
6 you made to the applicant with respect to construction
7 scheduling on the interior route. Now could you
8 elaborate on that? It may be that you have the same
9 recommendations as you do on the coastal route, but
10 you may not.

11 A For the -- I must describe
12 something that happens when caribou primarily winter in
13 the Yukon, and that is there appears to be two major
14 migratory corridors, one up the Richardson Mountains,
15 and one which we call the Old Crow route that goes up
16 to the Central Yukon and in the vicinity of Old Crow.
17 There appears to be a differential migration, a differ -
18 ential spring migration there. In other words, we have
19 often documented two major waves of migration up the
20 Richardson Mountains and generally one wave or single
21 movement up the Old Crow route. So our recommenda-
22 tions for the Old Crow route would be similar to those
23 for the coastal route. We would prefer to see, you know,
24 by April 30th no activity, if an interior route were
25 used along that route. For the Richardson Mountains we
26 did specify a few years ago that construction should
27 be carried out, if the interior route was used, through
28 that area far earlier because there is this differential
29 movement that takes place, an early movement that can
30 take place in March as well as a later movement that

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1 can take place in April and May. So we're concerned
2 about that and we specifically said that, "Do the
3 Richardson part of it much earlier because the caribou
4 are apt to be there earlier."

5 Q I presume it would be
6 fair to say that because there is a permanent all-
7 weather road from the Dempster Highway to Milepost
8 448 of that interior route, that there wouldn't be any
9 scheduling difficulty that the applicant has advised
10 you with respect to doing that at an earlier date.
11 Is that fair enough?

12 A I think I couldn't speak
13 on the scheduling difficulty. I think the applicant
14 was sympathetic to our comments and was prepared to
15 undertake that recommendation.

16 Q Is that correct, Mr.
17 Hemstock?

18 WITNESS HEMSTOCK: I'm sorry,
19 I can't recall the details of the scheduling for the
20 interior route. I could simply generally note that
21 we do have some flexibility but that I'm sure that
22 construction would have to be carried on during times
23 when there would be conflict with caribou.

24 Q I'm sorry, you're saying
25 that construction would have to be carried on during
26 times where there would be conflict with caribou?

27 A I think that we don't
28 have enough freedom to avoid that situation.

29 Q I see. That's precisely
30 what I was driving at because my assumption would be

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1 that if you had to stop construction in the Richardsons
2 at the end of March, and then in the Old Crow area
3 at spread C at the end of April, the fact that you have
4 a longer pipeline mileage on the interior route then
5 you would have a great deal of difficulty in completing.
6 You agree with those comments then?

7 A Yes, as I indicated, I
8 think we have some freedom in alleviating this impact
9 or the contact, but I don't think we can avoid it.

10 Q Perhaps, Mr. Hemstock,
11 through your counsel Mr. Marshall, you could enlighten
12 the Inquiry after lunch on this precise issue because
13 Mr. Commissioner, I 'm particularly interested in
14 being aware of all the ramifications of that scheduling.
15 It seems to me there are clearly more problems, as the
16 witnesses admit, on the interior route. Would that be
17 fair, Mr. Marshall, to provide us with some --

18 MR. MARSHALL: Sorry, Mr.
19 Veale, but I don't think I've got a good handle on
20 precisely what it is you want.

21 MR. VEALE: Well --

22 MR. MARSHALL: I appreciate
23 your concern about the inter-action with migrating
24 caribou. You want to get some more --

25 MR. VEALE: -- I want some
26 information -- Mr. Hemstock has advised us that they
27 agree that the construction in the Richardson Mountain
28 area should not take place after March 30th, I believe.
29 He's also agreed, and Mr. Jakimchuk has indicated it
30 is his recommendation that construction through the

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1 Old Crow area be completed prior to April 30th, or
2 at April 30th. Now, what I am suggesting is that
3 these create certain scheduling problems that your
4 engineers have no doubt dealt with, in the view that
5 you have a longer mileage route through the Yukon and
6 you have greater construction scheduling constraints
7 than on the coastal route. Do you understand that now,
8 Mr. Marshall?

9 MR. MARSHALL: Well, I thought
10 Mr. Hemstock had told you that he didn't think they
11 could avoid the inter-action between pipeline activities
12 and caribou.

13 MR. VEALE: That's right, he
14 did tell me that. What he didn't tell me, though,
15 precise scheduling details. In other words, I would
16 like to have some qualifications as to how much inter-
17 action.

18 MR. MARSHALL: I will check
19 with Mr. Hemstock over the lunch break and see if we
20 can be more explicit on that.

21 MR. VEALE: Q Mr. Jakimchuk,
22 you're listening, sir?

23 WITNESS JAKIMCHUK:

24 A Yes.

25 Q Dealing with the interior
26 route, I presume you feel that you have done enough
27 studies to have the baseline data to arrive at all
28 these recommendations for the interior route. In other
29 words, you have studied the spring migration in great
30 enough detail. Is that a fair assumption?

A Yes, we feel we've got

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1 good quality information and information that's
2 sufficient upon which to make protective recommendations.

3 Q That spring migration is
4 the time when you have, as I understand it, pregnant
5 cows starting the spring migratory procedure up to the
6 calving grounds.

7 A Well, yes, that's what
8 the spring migration is, and it involves crossing the
9 interior route, and as I have elaborated on at great
10 length in my supplement, sort of my rationale for
11 disliking that alternative, as a consequence.

12 Q Do you also dislike the
13 interior route because it has the three access roads
14 from the Dempster Highway? In other words, you're not
15 just dealing with the spring migration, you're also
16 dealing with an access road from the Dempster to the
17 Old Crow area and spread camp C, which is a temporary
18 snow road; you're also dealing with another temporary
19 snow road that runs from the Dempster Highway to the
20 Lapierre House area, and then you've got the third
21 factor, which is probably the worst, the permanent
22 all-weather road running from the Dempster to Mile
23 448 of the interior route.

24 A These are all factors.
25 When I speak of the route, it's just not the alignment
26 per se, it's the whole construction logistic require-
27 ments and so on that lead me to my dislike of that.

28 Q You're now referring to
29 the fact that large tractor-trailers will carry the
30 pipe and the heavy equipment on these particular

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1 access roads.

2 A Referring to the fact
3 that there will be a wide range of activities, as you
4 state.

5 MR. MARSHALL: I think, Mr.
6 Veale, the evidence given by Mr. O'Rourke was that
7 this was one of the alternative routes that could be
8 used for logistics. I don't know that the evidence was
9 that this was a certainty or that it was quantified.

10 M R. VEALE: I'm sorry, I
11 believe we should check that. Maybe you should check
12 that, Mr. Marshall. I read the evidence over that
13 -- at least the cross-examination I did last spring and
14 I felt it was quite clear that that was the only way
15 that materials would be taken into the interior route.

16 MR. MARSHALL: Well, I'll check
17 that.

18 MR. VEALE: Perhaps you could
19 confirm and clarify that.

20 Q In your research and
21 consideration of the spring migration, Mr. Jakimchuk,
22 have you made observations regarding the use of the
23 winter road area that has previously been constructed
24 to Old Crow with respect to the migrations of the
25 central group and the Ogilvie group?
26
27
28
29
30

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1 A I specifically have
2 not made a study of that. I have observed, on
3 several occasions caribou in and adjacent to winter
4 roads, but I am not sure about that specific -- what
5 specific area you are talking about.

6 Q YOu are aware of that
7 road, the one I mean, or course --

8 A Yes.

9 Q Is it possible that there
10 is information relating to that? It would strike me
11 that that would be a very critical factor, if in
12 fact caribou have established already a trail along
13 that and the fact that the applicant, as Mr. Marshall
14 will indicate this afternoon, may intend to use that
15 for heavy equipment, there could be difficulties there?

16 A Well, we have done
17 surveys over a number of years and most intensively
18 in '71 and '72 which cover and include that area,
19 have not noticed any particular aberations in movments
20 when caribou are in that vicinity.

21 Q That is not the precise
22 point that I was interested in, though. What I am
23 asking is whether or not they in fact used that winter
24 trail.

25 A I will have to check that
26 with some of our other researchers.

27 Q You have made a statement,
28 Mr. Jakimchuk, that the Interior Route involves
29 unavoidable interactions that you really cannot
30 percieve. Now, does that statement relate to what we

1 have been discussing now?

2 A Would you refer me to
3 a --

4 Q It is in Volume 89,
5 page 13492.

6 A I don't have that
7 before me.

8 Q Perhaps I could read it.
9 This is questioning in chief, question:

10 "You say that you are satisfied that the
11 Coastal Route, the Prime Route, would
12 not seriously interfere with migration
13 and you say that in the very last sentence
14 of your paper that it is your expectation
15 that actual losses or effects attributable
16 to the pipeline, both short and long term,
17 will be negligible. Is that your opinion
18 if the pipeline were to follow the Interior
19 Route, or does that remark -- does that
20 opinion apply only to the Coastal Route?"

21 Now, your answer:

22 "With respect to the Interior Route,
23 I think there would be some unavoidable
24 interactions that take place that we cannot
25 really percieve. The degree of unpredict-
26 tability is greater there. I would not
27 feel as confident in making that type of a
28 statement for the Interior Route, but I
29 should also add, sir, that much of my concern
30 for the Interior Route relates to other

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1 species apart from caribou."

2 A Yes.

3 Q Well, back to that
4 statement that I just made then, the one about the
5 unavoidable interactions that you can't really per-
6 ceive. What do you mean? I mean, we have been
7 discussing the interactions with the spring migration.
8 Now, is that the area you are talking about when
9 you can't perceive?

10 A What I am referring
11 to with respect to the Interior Route, is that the
12 greater likelihood of interactions and the consequences
13 of those are very difficult to define. Therefore, I
14 don't feel as confident in making a statement such
15 as I made on page 20 of my supplement for the
16 Interior Route as I do the Coastal Route, and
17 in these unavoidable interactions, I must refer you
18 also to the Canning River Valley in Alaska where
19 there are caribou movements and during year round
20 construction there would be unavoidable interactions,
21 the consequences of which are very difficult for me
22 to predict.

23 Q Now, if we add to what
24 you have said now, the dimension of the completion
25 of the Dempster Highway, you know, a fact that we
26 cannot ignore, but that is an additional complication,
27 isn't it, to the statement that you have just
28 made?

29 A It was a complication
30 at the time that I wrote this up. It is not an additional

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1 one.

2 Q I see, so in that state-
3 ment then you were including the complication of the
4 Dempster Highway?

5 A Not specifically,
6 but, the Dempster, you know, is a reality, and
7 you know, it is there. Parts of it.

8 Q Now, have you done
9 specific studies of the fall migration which, for
10 example took place in 1971 and apparently is taking
11 place this year, the interations of those migrating
12 caribou with the Dempster Highway?

13 A No, sir, we have not
14 taken -- done specific studies of that. We have,
15 in the fall of 1971, we did carry out some survey
16 work that was not a specific study of the migration,
17 vis a vis the highway.

18 Q Has it ever been
19 your recommendation to the applicant that such a
20 study should take place?

21 A Not to the applicant.
22 We felt that a study should take place and that that
23 be looked at by governmental agencies, but we did
24 not propose it to the applicant.

25 Q And what you are
26 saying then, I understand, would be that either the
27 Yukon Territory Game Branch undertake the study, or
28 that the Canadian Wildlife Service undertake the
29 study?

30 A That is correct.

1 Q And you would strongly
2 recommend that at this time?

3 A Yes.

4 Q Well, just to pursue
5 that. I am a little concerned as to why the applicant
6 or yourself has not in fact embarked upon such a
7 study in view of the fact that it appears that that
8 route, the Dempster and those three access routes
9 will be used. It seems to me that that is sort of
10 a major vacuum in these studies that have taken
11 place on the Porcupine caribou herd.

12 A I don't quite view
13 it in that way. We were most concerned with
14 studying the implications and the effect of the
15 pipeline, and the Dempster Highway does not parallel
16 the pipeline closely. As a matter of fact, it is
17 quite separate from the pipeline over most of its
18 length and the relationship between that and the
19 pipeline was not sufficiently great for us to feel that
20 we should specifically study the highway. That, I
21 think, is a particular problem in itself.

22 Q But is that because
23 the applicant has indicated, or taken your advice and
24 indicated a strong preference for the prime route
25 and doesn't wish to do the same in depth study
26 for the Interior Route?

27 A Well, we did in depth
28 studies on the Interior Route for mammals, as well as
29 the prime route, and we recommended against the
30 Interior Route quite clearly.

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1 Q So on that basis then,
2 your recommendation against the Interior Route would
3 also preclude you from doing any serious study of the
4 effects of vehicular traffic by the applicant on the
5 Dempster Highway?

6 MR. MARSHALL: No, he
7 thinks it is something that the government should do.

8 MR. VEALE: Did you agree
9 with my question, Mr. Jakimchuk?

10 A Would you restate it,
11 please?

12 Q What I am suggesting
13 is that you made a recommendation to the Applicant
14 that the prime route was better and that the Interior
15 Route was not desirable. Now, I am saying that you
16 made that recommendation at some point in time and
17 the applicant agreed with you and adopted it, and as
18 a result of that, you have not felt compelled to do
19 the research on the Dempster Highway, even though the
20 applicant's vehicles will be using it and will be
21 using the three access routes to the Interior Route?

22 A I don't consider the
23 use -- in the event the Interior Route were chosen.
24 I consider that the implications of the Dempster
25 Highway, or in the event that there was construction
26 on the Interior Route. I think the implications of
27 that highway in itself are greater than the additional
28 utilization of the applicant would be. So I don't
29 see that as the issue. I don't see that as a
30 central issue with respect to the protection of the

1 Porcupine herd, the incremental use by the applicant.

2 Q In other words, you
3 are taking the position that the highway is already
4 a threat and upon completion will be a distinct
5 threat, to use your own words, regardless of whether
6 the applicant goes through the Interior Route or
7 not?

8 A That is correct.

9 Q Have you been advised by
10 the applicant of the extent to which the Dempster
11 Highway and the three access routes to the interior
12 route will be used?

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1
2 A Not specifically advised
3 in any detailed way on that. I have had available
4 to me the construction, the application as filed, in
5 that sense, yes; but we have never had a detailed
6 discussion of it.

7 Q Well, do you at this
8 time wish to, you know, to qualify then the advice
9 you would give in the event that the interior route
10 is used, to the extent that you may not be aware of
11 the precise vehicular volume, for instance, on the
12 Dempster and on those access routes?

13 A I am presently not aware
14 of the precise vehicular volumes.

15 Q Do you feel that there
16 is any problem there in the sense that if it happened to
17 be of a nature, say, that caribou literature indicated
18 was detrimental?

19 A Well, there certainly
20 could be a problem, but that is not only related to
21 volume, it's related to timing, scheduling. That's
22 a very important part of it, in fact.

23 Q But you know, I'm press-
24 ing you to determine whether or not the details that
25 you may discover in the future would cause you to
26 change the position you're taking now.

27 A To change the position
28 I'm taking now with respect to the interior route,
29 you mean?

30 Q Yes. You stated you took

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1 a position that the Dempster is going to be a threat
2 without the incremental addition of pipeline activity
3 on the interior route. Now, could the information you
4 receive on vehicular traffic and so on, and supplies,
5 could that affect your opinion?

6 A I am certain it could,
7 if I looked at it in further detail, I may become
8 more precise in my opinion.

MR. VEALE:

9 Well, Mr. Commissioner,
10 this is an area of great concern to the Council for
11 Yukon Indians and I wonder perhaps if Mr. Marshall
12 appreciates our concern and it relates, I guess, to
13 the previous undertaking, Mr. Marshall. Maybe we
14 could get this. It would have to be in some detail,
15 you know, there would have to be something to state
16 that Mr. Jakimchuk^{could} you know, address himself to,
17 relating to the supply of the interior route and it
18 may be that Mr. O'Rourke is the only person with this
19 information, I'm not sure of your organization, Mr.
20 Marshall. But I would like to have that considered
21 by Mr. Jakimchuk.

22 THE COMMISSIONER: What do you
23 say?

24 M R. MARSHALL: There's quite
25 a bit of information in the record, I believe, on this
26 and I think as a starting point I'd want to go back
27 to the transcript to find that and I'll refer it to
28 Mr. Jakimchuk and he may be able to comment on that
29 while you're still here.

30 THE COMMISSIONER: A good

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1 idea. Mr. O'Rourke's evidence, I'm sure, can be
2 turned up in a couple of minutes and if resort is
3 had to the index perhaps you know --

4 MR. MARSHALL: In micro-seconds,
5 sir.

6 MR. VEALE: Q Mr. Jakimchuk,
7 relating to the comments that have been made with
8 respect to the Dempster Highway, do you in any way
9 feel that your studies and your recommendations and
10 conclusions on the interior route have been impaired
11 as a result of the lack of study by the government
12 authorities?

13 A Not seriously impaired.
14 I would prefer to have additional information, but not
15 seriously impaired.

16 Q I'll leave you the
17 opening that it may be in the event^{that}/the information
18 were of such a nature that you could come back and
19 say, "Well, you know, the facts weren't on the table."
20 You don't think it would seriously impair it at this
21 moment.

22 A Well, I'm not quite
23 sure I follow you on that. I'd like you to ask that
24 again.

25 Q Well, the statements of
26 yourself and DR. Banfield have indicated that the
27 Dempster Highway without mitigative measures is a
28 distinct threat to the Porcupine caribou herd.

29 A O.K.

30 Q Now, you've also indicated

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1 that, you know, your information is that no research
2 has been done on the problems with vehicular traffic,
3 and particularly heavy vehicular traffic on that
4 highway by either the applicant or yourself, or any
5 of the governmental authorities. Now, I'm just leaving
6 it open to you to say that the view you have taken
7 of it, and that view is that you know, the pipeline
8 is not a serious incremental factor. That could be
9 impaired by future studies or by maybe even existing
10 studies. I doubt if there are any.

11 A When I take that view,
12 I'm referring to the proposed routing of the pipeline
13 along the North Slope and my view could be altered
14 with an interior routing.

15 Q I would like at this
16 time, Mr. Jakimchuk, to see if on the present information
17 you have, and the studies you have done, we can agree
18 or at least discuss on certain recommendations for
19 the Dempster Highway, and these would be recommendations
20 not only for the applicant of course, but for people
21 in general. In other words, we're talking about the
22 access to that highway. Now my information is that
23 the area of concern for the Yukon Territory would be
24 with respect to the Dempster Highway between Milepost
25 69 at Chapman Lake and Milepost 289 at approximately
26 the Northwest Territories border, and within that
27 area, that is where you have the range, the winter
28 range on either side of the highway.

29 A Sir, I don't have a
30 map before me with those mileposts. I haven't studied

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1 the Dempster Highway in detail. I'm not, you know,
2 that familiar with its precise routing and it's
3 difficult for me to respond.

4 Q Perhaps Dr. Banfield
5 can help us.

6 WITNESS BANFIELD: I'm trying
7 to locate Chapman Lake. With lights I've found
8 Chapman Lake.

9 Q Dr. Banfield has his
10 left hand on the Chapman Lake area and his right hand
11 on the N.W.T.-Yukon border. Now that, Mr. Jakimchuk,
12 is the area that I was referring to previously.

13 WITNESS JAKIMCHUK: Yes

14 Q That would be, to put it
15 simply, the area of concern on the Dempster.

16 A Yes sir.

17 Q Now, from your statements
18 previously it appears that some monitoring of vehicle
19 traffic on that highway would be in order.

20 A I think it would be in
21 order but I should also add I'm a little out of touch
22 with what the Territorial Game Branch has been doing,
23 and I think there has in fact been some monitoring
24 by way of observations carried out by the Canadian
25 Wildlife Service.

26 Q Well, maybe I can
27 enlighten you to some extent there. I don't think
28 the Territorial Game Branch has done any research or
29 monitoring relating to recommendations for
30 monitoring traffic. Their monitoring takes place

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1
2 during the caribou hunting season and relates to the
3 corridors in which they allow no hunting, and the
4 corridors where they do allow hunting.

5 A I see. Well, I think
6 the Canadian Wildlife Service has made observations
7 relating to the highway as well during contact of
8 caribou with the highway. But I don't believe there
9 is a report on that.

10 Q You're not aware then
11 of any recommendations that they have made?

12 A No, I am not.

13 Q Mr. Jakimchuk, I presume
14 that you've read most of the available caribou literature
15 and as it relates particularly to the, you know,
16 experiments or evidence in Norway relating to herds
17 being cut off and so on.

18 A I've read as much as I
19 could get my hands on.

20 Q Well, would you agree
21 then that considering that this highway is a distinct
22 threat, that perhaps there should be a recommendation
23 that there be a complete ban on high-speed and heavy
24 traffic on the Dempster Highway between those two
25 points I've indicated, between the months of September
26 and May?

27 A All depends on what you
28 mean by "high-speed". That's a long time period. You
29 know, that's something that I can't just answer glibly
30 without studying a little bit, you know, in all fairness.

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1
2 You know, I would support the intent of that most
3 definitely, particularly during periods of major
4 movements such as in fall migration, which covers
5 that period in October, and such as at the onset of
6 the spring migration. It might not be a realistic
7 or necessary precaution during the time that animals
8 are wintering elsewhere or are on winter range, at
9 which time their movements are, you know, fairly
10 limited.
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1 Q In other words, you
2 are stating that if we had someone up there monitoring
3 that herd at all times, which I presume you would
4 like to see --

5 A Yes,

6 Q That if we had someone
7 doing that, they could say, well, in this particular
8 year they are all over in Alaska, or they are all
9 up on the coast, so don't worry about it, you don't
10 have to put the vehicle restrictions on.

11 A I think that that is the
12 sensible approach to reconciling resource conflicts.

13 THE COMMISSIONER: Excuse
14 me, just so I -- what is it that is a sensible
15 approach?

16 A Well, the fact that
17 decisions are based on the most current and up to
18 date information.

19 THE COMMISSIONER: Yes.

20 MR. VEALE: To come at it
21 from another way, does the research that you have
22 done to date compel you to recommend that pipeline
23 support traffic for the Interior Route be scheduled
24 to and restricted to June 1 to September 1? In other
25 words, the time at which your evidence would indicate
26 they are never there?

27 A I don't recall making
28 a specific recommendation of that nature. I don't
29 recall doing it. I think that was something --

30 Q I am sorry -- I have

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1 never seen reference to that, Mr. Jakimchuk. I am
2 putting it to you know. You haven't made the recom-
3 mendation that I am aware of, and I am asking you
4 if the evidence that you have at this point in time
5 would lead you or compel you to make that
6 recommendation?

7 A May I have the
8 recommendation again, please?

9 Q That all pipeline
10 support traffic for the Interior Route be scheduled
11 between June 1 and September 1, being the time
12 when the herd would most likely be in the summer
13 range and completely away from the highway?

14 A I think -- let me
15 qualify and say that I don't want to be hung with it,
16 but that appears pretty reasonable. You know, there
17 are exceptions, too, sir. You know, the timing could
18 be different, depending on what the caribou do in
19 that particular year.

20 Q Okay, I was hoping that
21 you would say that. The reason being, that we could
22 have another variable and that would be, that if
23 circumstances were different, and we all realize the
24 unpredictability of that herd, that --

25 A I couldn't accept that
26 in total, that last statement.

27 Q Okay. Well, let's just
28 take it then from what you said. You said there
29 could be what? Variations?

30 A Variations, and I am

1 particularly speaking of winter range right now.
2 Utilization of winter range.

3 Q Let's take that
4 situation then where you are saying there could be
5 variations in the utilization of winter ranges.
6 The proposition that I put to you now, is that
7 there could be the imposition of an enforced speed
8 limit of the range of 15 to 20 miles per hour for
9 vehicle traffic in the times when there was concern
10 that the herd was near the highway?

11 A Yes, there could
12 be.

13 Q Would you recommend
14 that?

15 MR. MARSHALL: We are not
16 really in a position to say

17 MR. VEALE: Well, no, I am
18 asking Mr. Jakimchuk whether he would recommend
19 that.

20 A Are you referring to
21 speeds on the highway itself?

22 Q Yes, I am.

23 A I don't think it would
24 be necessary to go that slow, actually, 30 miles an
25 hour.

26 Q But you have no research
27 though to really be pinned on that?

28 A I am not involved in
29 setting, you know, speed limits.

30 Q You would agree that a

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1 speed limit should be imposed, but you feel it may
2 be more than 20 miles per hour?

3 A I am not sure. I am
4 telling you that I don't know precisely what it
5 should be. In the event that there were caribou
6 in migration or in the vicinity of the highway, I
7 would say that speed limit precautions should be
8 imposed.

9 Q Would you also agree
10 that we have a frequency problem? It is not just
11 a speed problem, it is a frequency problem? In other
12 words, how many vehicles per hour, for example?

13 Would you also agree that
14 there should be restrictions relating to, say,
15 three or four large convoys per day at, say, six
16 to eight hour intervals in the use of the highway?

17 A These are all things
18 that I would like to , you know, in the event that
19 the pipeline were constructed on the Interior Route,
20 I would study in considerable detail, but I have not
21 studied things such as the number of convoys and
22 the timing of convoys specifically. They are im-
23 portant, though.

24 Q Yes. So, I take it
25 then that if the Interior Route were chosen then,
26 further research would be required?

27 A Yes, sir, that is my
28 feeling, and of course, I have said because of all
29 of these factors which you have raised, that's
30 why I don't prefer the Interior Route.

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1 Q Have you read any of
2 the literature relating to that type of recommendation,
3 in other words, convoying vehicles to avoid the
4 frequency problems?

5 A No, sir.

6 Q With respect to the
7 three access roads from the Dempster to the Interior
8 Route, would you recommend to the applicant and to
9 this Inquiry that those access routes be restricted
10 to pipeline vehicles and not be open for public
11 access?

12 A Are you referring to a
13 recommendation with respect to caribou?

14 Q Yes.

15 A I think that I would
16 recommend that.

17 Q Would you also agree
18 that in addition to research that would be required
19 in the event that the Interior Route were chosen
20 relating to convoying and vehicle traffic, that it
21 would also be a requirement that research be done
22 to identify the critical areas along the Dempster
23 Highway, or is that already done?

24 A There could be more
25 work done on that.

26 Q Would you recommend that
27 more work be done?

28 A Yes.

29 Q Now, while we are on
30 the issue of further research, there are a number of

1 areas in the discussions that we have had in the
2 last few days which to me indicate further research
3 could be done that would be of value to yourself and
4 presumably to the applicant and other authorities, and
5 I refer now to the post-calving aggregation. You
6 cannot tell me why it occurs or for precisely
7 what reasons. Now, would you recommend that further
8 research be done in that area?

9 A As a point of academic
10 interest to the scientific community I would, but
11 I don't think that it is that relevant to the applicant
12 for him to undertake such research, if the applicant
13 will avoid interactions of that post-calving aggrega-
14 tion, which he proposes to do.

15 Q Okay, if we take out
16 that assumption that they will avoid interaction, and
17 let's say that it is determined by this Inquiry that
18 some interaction will inevitably occur, would
19 you then recommend that further research take place
20 on the post-calving aggregation?

21 A I would be more interested
22 in recommending protective measures than I would
23 further research with regard --in terms of realities
24 -- with regard to the post-calving aggregation. In
25 other words, I would prefer to treat it pragmatically
26 rather than as a matter of scientific interest.

27 Q Although the two aren't
28 mutually exclusive, are they ?

29 A No, they are not.
30 One will of course learn from the baseline data.

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1 Q But I take it then that
2 we are in agreement that were there to be interaction,
3 that further research would be done of the nature
4 you have indicated?

5 A Well, as I stated, my
6 first interest is to design protective measures to
7 avoid these interactions rather than -- that would
8 be my first goal, rather than to design a research
9 program on the significance of the post calving
10 aggregation. My first priority would be a protective
11 one.

12 Q I see, then maybe we'd
13 better clarify this because I would like you to make
14 an assumption that there is going to be interaction
15 so that your protective measures research would not
16 be totally applicable. It would certainly be relevant.
17 Would you then recommend that further research be
18 done?

19 MR. MARSHALL: There are
20 two assumptions there. We can agree with the first
21 one; the second one, that the mitigative measures
22 wouldn't be applicable, I don't know whether that
23 necessarily follows. It may or may not be.

24 A Well, we are
25 getting into perhaps the philosophy of research as
26 well. I would recommend that additional research
27 work be done. The orientation of that, however, would
28 be to such things as the location, the extent, the
29 timing of this post-calving aggregation, so that
30 data were available upon which to make protective

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1 measures.

2 Q I am not really getting
3 this point across, but it just strikes me that there
4 may be a point that the protective measures, you know,
5 is not going far enough and the interaction will occur
6 despite the protective measures, and then, I suggest,
7 you have to satisfy yourself that the interaction
8 would be such that it would not do some serious or
9 significant damage?

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1 A Yes, I would be most
2 interested in satisfying myself on that.

3 Q And at this point in
4 time you are not able to^{so}satisfy yourself on the
5 assumptions that I have given you.

6 A To some extent I am able
7 to, inasmuch as from the studies we have done, we've
8 seen these aggregations. I am reporting on our people
9 in Alaska who have carried out surveys. We've seen
10 how they respond to topography, terrain, various
11 conditions, how they respond to the by-pass of an
12 aircraft. So to some extent, you know, it's not a
13 total vacuum as to what a human or man inter-action
14 would have on a post-calving aggregation.

15 Q But considering the
16 importance of that event, and how that is, you feel
17 possibly a requirement to the southern migration that
18 follows after.

19 A I consider it's an
20 important event, yes.

21 Q And to that extent
22 it would be of great assistance to have that research.

23 A Yes sir.

24 Q Have you done any specific
25 research relating to the Porcupine caribou herd and
26 the issue of abandonment?

27 A No sir.

28 Q Have you had discussions
29 with the applicant on the problems of abandonment?

30 A Some general discussions,

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1 yes.

2 Q Would you relate those
3 to us now?

4 A Well, from time to time
5 in the past we have realized that abandonment is a
6 phase of total pipeline program and we have asked what
7 is the likely consequence of an abandonment of a
8 pipeline, and we were told that there are various
9 alternatives available. The pipe can be left in the
10 ground. It can be recovered. Facilities can be
11 dismantled or left, but it was so far down the road
12 that there was no specific information on what might
13 occur 20, 30, 40, 50 years from now. Those were the
14 nature of the discussions.

15 Q So then I would take it
16 then at this point that you do not wish to take a
17 position on the impact of abandonment on the Porcupine
18 caribou herd.

19 A I don't think I can take
20 a position, not knowing what would be involved.

21 MR. VEALE: Perhaps we could
22 break for lunch, Mr. Commissioner.

23 THE COMMISSIONER: We'll come
24 back at two then. How are you getting on, Mr. Veale?
25 I take it that Mr. Templeton comes after you, and then
26 Mr. Scott, and I was thinking we might -- and Mr. Bell.

27 MR. SCOTT: Mr. Hollingworth has
28 questions on non-birds.

29 THE COMMISSIONER: Right. Well,
30 this panel will obviously be with us till the end of

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1 the week, but we may have a fighting chance of complet-
2 ing the cross-examination of this panel by tomorrow
3 afternoon?

4 MR. VEALE: I think you're
5 taking a great leap into the unknown.

6 THE COMMISSIONER: All right.
7 I can dream, can't I? Well, we'll adjourn till two.

8 (PROCEEDINGS ADJOURNED TO 2 P.M.)

9 (PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

10 THE COMMISSIONER: All set,
11 gentlemen, Mr. Veale?

12 MR. VEALE: I understand Mr.
13 Marshall has some comments.

14 MR. MARSHALL: Sir , there were
15 a number of things that we were to reply to. Perhaps
16 I should start with one that's left over from a
17 little earlier, and that pertains to the Great Bear River.
18 There were questions asked of Dr. McCart about blasting
19 and earlier on you'll recall that Dr. McCart had
20 indicated he checked with N.E.S. and understood that
21 the crossing location was being changed. Dr. Fyles
22 asked me to confirm that it indeed was going to be
23 changed or it was not going to be, and I've checked
24 that and I understand that the information Dr. McCart
25 had was not quite correct. The situation is this,
26 there has been no change in that crossing location.
27 N.E.S. are considering another crossing and they have
28 some geotechnical assessment under way. Until that's
29 completed they are not in a position to make a
30 recommendation to Arctic Gas that a change be made.

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1 Dr. McCart has a statement to
2 make with respect to blasting for the Great Bear
3 crossing and he could do that now, sir, to respond
4 to that undertaking.

5 WITNESS MCCART: Yes, I
6 discussed blasting at the Great Bear River with Mr.
7 Williams and he informs me that he prefers winter
8 blasting because it is easiest to carry out this
9 operation by drilling through the ice during winter
10 and setting off the charges at that time. He informs
11 he that it is possible, however, to do this work in
12 summer, though it is rather more difficult and more
13 expensive.

14 From the aquatic viewpoint I
15 could make the following points:

- 16 1. It appears from Dr. Wilimovsky's testimony that
17 blasting under the ice is potentially more damaging
18 than blasting during the ice-free period.
- 19 2. We would therefore have preference for blasting
20 under ice-free conditions than during the spring and
21 summer period.
- 22 3. However, this does not preclude winter blasting
23 if it can be demonstrated that populations of fish
24 will not be harmed.
- 25 4. At this time there is no indication that the
26 area in the vicinity of either of the present Great
27 Bear River crossing or the one that is being examined
28 -- there is no indication that either of these crossings
29 is critical to any fish population. We expect in future
30 to examine this area in more detail once a final

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1 decision is made regarding the crossing site, and if
2 there is no evidence that fish populations will be
3 harmed, we would under those circumstances be willing
4 to approve winter blasting.

5 On the other hand, if there
6 is evidence that harm would result, we would disapprove
7 or certainly not be our recommendation that blasting
8 be carried out in the winter.

9 MR. MARSHALL: Now, sir, there
10 were a number of matters that arose this morning. Mr.
11 Veale wanted me to check on what the evidence had been
12 with respect to Arctic Gas plans relating to possible
13 use of the Dempster for logistics purposes. There was
14 considerable evidence that was given on this subject,
15 sir, first here in Yellowknife, and then in White-
16 horse. I've attempted to go through the transcripts
17 and I hope the following is a fairly fair assessment.
18 I should point out that the comments that I'm going to
19 make pertain to the logistics plans that would support
20 the interior route construction, not the prime route.

21 Now in the application, in
22 Section 14-E-1, specifically it's 1.2.1.4, at page 8
23 and following there's a table which sets out the number
24 of miles of pipe. For the interior route in Canada
25 that would be brought in via the Dempster Highway and
26 the stockpile locations are set out in that table, it's
27 table 1-1, title pipe allocation, interior route,
28 Marsh Fork, my quick calculation was that there were
29 158 miles of pipe in Canada that this table shows being
30

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1
2 brought up via the Dempster, and the text makes it
3 clear that it's contemplated that the pipe would
4 be brought up from ports either in -- at Anchorage,
5 Valdez, or Skagway, and then brought to the interior
6 route, and that would involve a routing through White-
7 horse, as I understand it, and up the Dempster that
8 way. Now following that, sir, there was evidence
9 from Mr. O'Rourke that indicated that the C.N.-C.P.
10 logistics plan, which is a document that he referred to at
11 length in his evidence, is a document that was completed
12 after the exhibit was filed, and C.N.-C.P. made a
13 recommendation that the most economic way to deliver
14 the pipe would be via the Mackenzie River barging
15 system, and there was some cross-examination about
16 that in Whitehorse. Mr. Veale was asking Mr. O'Rourke
17 whether or not it was possible that some of the pipe
18 could be moved through Whitehorse.

19 Now the initial statement by
20 Mr. O'Rourke, I think, is found at page 6972 of the
21 transcript where he indicates what the recommendation
22 had been. Mr. O'Rourke agreed with Mr. Veale's
23 salesmanship and felt that yes, they could move some
24 of the pipe up through Whitehorse and up the Dempster
25 that way, but he suggested that he didn't think that
26 would be possible for fuel or for camps or for con-
27 tractors' equipment. So we are just simply talking
28 about pipe.

29

30

1 The discussion is found
2 about at pages 6973 of the transcript.

3 Finally, sir, I should point
4 out that the evidence seems to indicate at page
5 4534 and elsewhere, I think it was discussed on a
6 number of occasions, that if the Mackenzie River system
7 were used for logistic support in the Interior Route
8 as Mr. O'Rourke has recommended, there would be use
9 made of the Dempster Highway, but that would be
10 going in the reverse direction. In other words, be
11 going from the Arctic Red River area along the
12 Dempster Highway west and that would be to supply
13 pipe to the Interior Route in Canada from the U.S.
14 border east.

15 Now, sir, I think that that's
16 the evidence that the Arctic Gas witnesses gave
17 on the logistics plan. Mr. Veale wanted Mr. Jakimchuk
18 to deal with the interactions that there would be
19 with caribou as I understand it, given that plan for
20 the Interior Route, and he is prepared to do that
21 now, sir; and following that, Mr. Veale had indicated
22 that he wanted to know what steps could be taken
23 by way of mitigative measures as I understood it,
24 maybe I haven't gotten your intention completely,
25 Mr. Veale, but Mr. Hemstock has some comments that
26 he can make with respect to that subject, sir.

27 Then there were a number of
28 other questions addressed to Mr. Jakimchuk that aren't
29 related to this point, and we'd like to follow up
30 with later on, but, sir, I would like now to ask MR.

1 Jakimchuk to deal with the interaction that there
2 might be with caribou given the logistics plan for the
3 Interior Route as I just outlined it.

4 MR. VEALE: Mr. Commissioner,
5 if I could just interject here to ask Mr. Jakimchuk
6 if he was aware of the evidence that Mr. Marshall
7 has just put in. It appears to me, Mr. Marshall, that
8 that evidence indicates that one way or the other,
9 whether it is the Mackenzie River route, or it's
10 through Skagway, all the logistical material for the
11 Interior Route will be using the Dempster Highway.

12 MR. MARSHALL: Well, I
13 think, as I understand it, Mr. Veale, Mr. O'Rourke
14 agreed that there is a possibility that a logistics
15 route via the Dempster out of Whitehorse could be
16 used depending on economic conditions. Given the
17 recommendation he has made and the assessment that
18 he made of the economics, he was recommending that
19 the Mackenzie River system be used, but that that
20 necessarily would require some use of the Dempster,
21 but going the other direction.

22 MR. VEALE: Okay, so we are
23 of the same mind on that then. What is your comment
24 to that, Mr. Jakimchuk? Were you aware of this?

25 WITNESS JAKIMCHUK: I was
26 not aware of all of the alternatives that were available
27 by way of transportation, or at least not aware of
28 what the most likely one would be.

29 Q And at this particular
30 point, then, having been advised by Mr. Marshall, you

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1 still wouldn't be aware of any particular volumes or
2 frequencies involved in getting material transported
3 to the Interior Route?

4 A Not on the volume and
5 the frequencies.

6 Q Perhaps then you might
7 wish to elaborate on the comments you wish to make?

8 A Well, in the discussion
9 of this over lunch, the point was asked of me whether
10 it would assist the overall situation of caribou if
11 the main traffic, owing to the pipeline was to come
12 from the Mackenzie River rather than via Whitehorse,
13 and I feel this would assist materially in reducing
14 interaction.

15 Q Why?

16 A Well, for one thing,
17 the distance is shorter. It is much more manageable --

18 Q Well, just on that
19 particular point, why is the distance shorter if you
20 are going over to the winter trail that goes to
21 Spread Camp C? That strikes me as using a greater
22 portion of the Dempster Highway than it would if you
23 brought it up from Whitehorse?

24 A Well, that certainly
25 doesn't appear to be the case to me on the map that
26 I looked at. What I am saying is that the interaction
27 with the entire range of the Porcupine herd of pipeline
28 related traffic would be less via the Mackenzie
29 River traffic flow, traffic coming from the Mackenzie
30 to staging sites than via Whitehorse.

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1 Q Okay, maybe you'd better
2 go ahead and say why and I won't interrupt.

3 A Well, having looked
4 at the map, the distance from the Mackenzie River to
5 the staging sites on spreads B and C is far less than
6 the distance from Whitehorse to spreads B and C. That
7 is the type of level of generalization that I am
8 talking about.

9 Q Oh, I see our confusion
10 then. I am speaking of the Dempster Highway and the
11 Porcupine caribou herd rather than the distance between
12 Whitehorse and Dawson City. Now, if I direct your
13 attention to the Dempster Highway, do you still
14 prefer or recommend the staging from the Mackenzie
15 River?

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1 A I would still recommend
2 that, yes.

3 Q Would you elaborate on
4 that?

5 A Well, the reason for that
6 recommendation is the fact that I feel there is a
7 smaller area where control would be required, a shorter
8 and more manageable area in terms of distance where
9 one could focus one's attention on movements and on the
10 likelihood of movements within that area, and it's
11 my feeling also, and I may have confused your question,
12 but it's my feeling also, that in any event if you came
13 from Whitehorse we would still have to deal with stag-
14 ing at those spread sites. But that you are eliminating
15 some potential inter-actions by coming from the Macken-
16 zie River.

17 Q I'm going to labor this
18 because I still don't see why you've taken that posi-
19 tion. I mean, forget about the highway between White-
20 horse and Dawson. Trucks have been running up and
21 down that for 20 years, and you know, one every ten
22 minutes.

23 A Let me put it in these
24 terms. If one were to go the reverse direction you
25 would avoid inter-action with one of the major
26 migratory routes, the Old Crow route, and restrict
27 that inter-action to possible inter-actions on the
28 Richardson migratory route; and I'm not talking --
29 I'm talking of coming up from Dawson through the
30 winter range of the herd and of course where the spring

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1 migration originates.

2 Q You're confident in
3 making that statement, are you? On the understanding
4 that you know, they do have various areas where they
5 do winter down there, I mean in the particular year
6 in which that route is used that simply may not be the
7 case.

8 A Well, I've agreed to the
9 variability that can take place in wintering, and in
10 specific migration routes as well.

11 Q What I put to you is that
12 that route going through from the Dempster to Old Crow
13 is going to have inter-action no matter which direction
14 you come from, because part of the inter-action and a
15 great part of the inter-action will be between the
16 Dempster Highway and Old Crow and spread camp C.

17 A I think that particular
18 segment will have inter-action no matter which route
19 you come from, that's correct, yes. I'm suppose
20 I'm talking about that area of the Dempster Highway
21 from Dawson to the point at which the staging takes
22 place and the use of the temporary winter roads take
23 place.

24 Q And your feeling is that
25 the portion between Dawson City and the access route
26 into Old Crow, that portion of the Dempster Highway you
27 feel, would have a significant impact on the Porcupine
28 caribou herd?

29 A No, I wouldn't go that
30 far. I've already stated my opinions of the potential

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1
2 impact on the herd. All I'm stating to you now with
3 respect to this reversal of traffic is that I think
4 it is potentially -- or I think it is preferable,
5 it avoids some of the potential inter-actions. It's
6 just as simple as that. I'm not saying that one would
7 automatically solve all problems associated with the
8 Dempster Highway by doing that.

9 Q And if I understand it
10 correctly, you're making a judgment now; you're not
11 basing that on baseline data.

12 A I'm making a judgment,
13 yes.

14 Q And that in fact the
15 required research on the critical area of the Dempster
16 Highway has not been done.

17 A There is a considerable
18 amount of baseline information, for example, available
19 on what would be some portions of the highway. I refer
20 now to that area where it passes through the Richard-
21 son Mountains, but there are certainly gaps along
22 other large areas of the highway. So I can't
23 categorically state, you know, that there is nothing.
24 There is a considerable baseline in some portions.

25 Q Then you would agree
26 that there is a lot more to come.

27 A Well, I would support
28 additional research on the Dempster Highway to be done
29 by somebody with respect to the caribou, yes.

30 Q Now turning to the

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1 permanent all-weather road that goes from the Dempster
2 to the Richardson area, that's Milepost 448 of the
3 interior route, if I understand you correctly you
4 just stated that that is an area in which you have
5 done some research and you have some opinions.

6 A That's an area in which
7 we have done baseline research, yes, on caribou.

8 Q And you feel confident
9 from the research that you have done that that area
10 is not as great a concern, that portion of the Dempster
11 or of that permanent road, is not as great a concern
12 as the portion between Dawson and the access to
13 Old Crow.

14 A I think it's of equal
15 concern.

16 Q Well, if it's of equal
17 concern, why do you recommend the access to be used
18 from the Mackenzie River?

19 A Well, I think one cannot
20 ignore a concern related to an inter-action with cari-
21 bou. I'm as concerned about that area in the Richard-
22 sons as I am concerned about other segments of the
23 highway. I am saying that I feel that the problem can
24 be more readily dealt with, with the reversal of
25 traffic, and I believe that to be true. It would
26 require a specific study, however, of scheduling,
27 vehicular movements and so on, as you have suggested,
28 and something that in the event a pipeline was construc-
29 ted we would devote a great deal of attention to. We
30 haven't done that final design phase for that particular

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1 area.

2 Q Why do you call that
3 final design?

4 A Well, the reason I call
5 that final design is we have not been asked, for example,
6 we have not been told that a pipeline would be construc-
7 ted^{there} and if a pipeline were not constructed there would
8 be very little point in us developing specific measures
9 and regulations associated with that area. That type of
10 thing occurs for site specific localities, once a
11 decision has been made.

12 Q But you haven't been told
13 that there will be a pipeline on the coastal route
14 either, and yet you've gone into great detail in your
15 research of the calving ground and the post-calving
16 aggregation.

17 A Well, we've been told, and
18 obviously an application has been made to build a pipe-
19 line on the coast rather than on the interior, but I
20 might state that we have devoted research, a comparable
21 level of research effort to the interior route, done
22 detailed studies in the Canning Valley, for example,
23 which is identified as a sensitive area, as well as
24 the coastal route.

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1 We have to respond to a
2 certain level. We have to make our input at a certain
3 level depending upon what appears to be the applicant's
4 goal.

5 Q Fair enough, when you
6 have been stating, "We have been told", you mean the
7 applicant has told you?

8 A And what are you
9 referring to?

10 Q Well, you said it twice.
11 They were your words just 30 seconds ago: "We have
12 been told various things." "We have been told..." I
13 assume you mean that Renewable Resources has been
14 told by the applicant?

15 A We have been told that
16 at one point when the decision was made that the
17 application was going to be filed for the coastal
18 route, having had our input prior to that, on recommend-
19 ations and routing and so on. But we are kept informed,
20 perhaps that is a better word, of changes that occur
21 from time to time in design or scheduling, routing --

22 Q But the message that
23 I am getting now is that the applicant isn't taking
24 a realistic look at the Interior Route?

25 MR. MARSHALL: Well, that
26 is argumentative, surely.

27 THE COMMISSIONER: Where is
28 this getting us, Mr. Veale? We've known that all
29 along the Prime Route has been along the coast, the
30 Interior Route has been the alternate route. Now, what

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1 good is it, for Mr. Jakimchuk has told us that they
2 didn't work as intensively on the Interior Route
3 as they did on the Prime Route. What else do we
4 have to know?

5 A May I alter that
6 just a wee bit? Our baseline effort was as intensive
7 on the Interior Route as on the Coastal Route, but in
8 the last year to year and a half, our efforts toward
9 recommendations and site specific stuff has been
10 more intensive on the Prime Route.

11 MR. VEALE: Fair enough.
12 Are there any difficulties that your research in the
13 Richardson Mountains area with respect to the Interior
14 Route, are there any difficulties that have come to
15 your attention with respect to river crossings and
16 the same river crossings that the highway would
17 make?

18 A I am --

19 MR. MARSHALL: Sorry --
20 related to caribou?

21 MR. VEALE: Yes.

22 MR. MARSHALL: Perhaps
23 Mr. Jakimchuk understands that, but I don't.

24 A I am having a little
25 bit of difficulty with that question. We have not
26 identified a concern in the Richardson Mountains
27 related to river crossings with respect to the
28 pipeline. We haven't identified -- I am not saying
29 that there isn't one. We haven't been able to
30 identify one.

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1 Q Do you have anything
2 further, Mr. Jakimchuk, relating to this morning's
3 undertakings?

4 MR. MARSHALL: He does, Mr.
5 Veale. There were a number of specific items
6 you asked about. I believe you also, on this subject
7 of the caribou and the Dempster, wanted some inform-
8 ation pertaining to schedules and mitigative measures
9 and Mr. Hemstock can offer you something on that
10 now.

11 MR. VEALE: Mr. Hemstock.

12 WITNESS HEMSTOCK: You
13 asked us this morning to take a look at the flexibility
14 that there might be in the construction procedures
15 in the Interior Route in the Yukon. I have been
16 in touch with Mr. Williams and also talked with
17 Mr. Jakimchuk.

18 It would appear that the
19 schedule for Spread A, which is the one that starts
20 on the Alaska-Yukon border, as a matter of fact, it
21 starts at about Milepost 350, and goes to the Alaska-
22 Yukon border, that there would be little chance of
23 conflict there. The information that we have is that
24 the caribou move through this area. The earliest
25 recorded about the 6th to the 10th of May, and
26 as late as the 16th to the 18th of May, that is, in
27 their movement, so that we would anticipate the
28 construction in that section would be completed
29 before there would ^{be} an interaction.

30 However, in Spread B, the

In reviewing this with Mr. Jakimchuk it would appear that we would alleviate that by reversing the direction of construction and starting then on the east side and moving to the west instead of the way that it is presently planned. Mr. Williams sees no great difficulty with that and that would put the construction in the more critical area early in the year.

A It would begin, in that case, about at Milepost 415.

A Yes, it would look
to be better move 'back towards the west.

A No, sir, that was
simply a discussion that we had with Mr. Williams as

1 a result of the conversation this morning and he
2 said that he could see no difficulty in simply rever-
3 sing the direction of that spread. It is a sort of a
4 detail of how the construction would be handled at
5 the time.

6 Well, the same general
7 thing would apply to Spread C and again, there would
8 be merit. It is now planned to start in the east
9 and move to the west. From the standpoint of the
10 conflict that you raised this morning it would appear
11 to be some advantage, although not so great, to
12 reverse the order of that spread.

13 Mr. Williams was not
14 so convinced that this would be as easy to do in
15 this particular case. There is the matter of the
16 moving of the camp involved and he would have to have
17 a closer look at this situation.

There's some freedom
here and we can look at this, but it's not as clear-
cut as for spread B.

A Spread C would start at about Milepost 475, as presently planned, and it would go back towards the west --

10 A -- to 415, yes.

16 A I believe that's correct
17 and I think that the dates that I gave you apply to
18 both B and C.

21 Q Possible mid-April
22 commencement?

26 Q Do you have any other
27 comments on Mr. Hemstock, going across to the one at
28 the Richardson Mountains?

29 A Well, spread C takes us
30 to the Peel River.

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1 Q Do I take it then that
2 -- I thought there was some discussion this morning
3 with Mr. Jakimchuk relating to the Richardson Mountains
4 area, and I believe you indicated your recommendation
5 was that you would stop construction there at some
6 date; is that correct, Mr. Jakimchuk?

7 WITNESS JAKIMCHUK: We
8 recommended -- I've forgotten exactly precisely what
9 I did say -- we recommended, I think I said earlier,
10 by March 31st in the Richardsons. That was our
11 general recommendation from some time ago.

12 MR. MARSHALL: Mr. Veale, if
13 you're finished your questions of Mr. Hemstock in that
14 subject area, Mr. Jakimchuk was to respond to a number
15 of other questions you had asked.

16 MR. VEALE: I just have one
17 more there, Mr. Marshall.

18 Q What then is the position
19 of the applicant with respect to the potential inter-
20 action on spread camp C? You've now indicated you're
21 considering a reversal of the construction process from
22 east to west. If it still involves what you might
23 term unavoidable inter-action, are you prepared to
24 stop construction on spread camp C?

25 WITNESS HEMSTOCK: I think that
26 we have indicated that under certain circumstances we
27 would be prepared to stop construction. If there was a
28 direct contact or there appeared to be imminent direct
29 contact with a large body of caribou moving through, yes,
30 we would. However, we would not be prepared to stop

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1 construction if there were a few animals, as there
2 may well be, throughout this area, and there appeared
3 to be no direct harm to them.

4 Q What would you advise
5 the applicant to do in a situation -- we've seen
6 photographs where there is a long single file line
7 of caribou because of snow depth, so they pack it
8 down and they have the advantage of going in single
9 file and having a clear path. Now in the event you
10 have a long line which could last a number of days,
11 or longer, what is the position then?

12 WITNESS JAKIMCHUK: You're
13 asking me that?

14 Q Well, go ahead.

15 A You were looking at
16 Mr. Hemstock. Well, No. 1, taking a close look at
17 that area if that routing were to be constructed, we
18 would want to see the completion of activity prior to
19 these dates that were given so that that type of thing
20 was unlikely. During the time of construction, how-
21 ever, we would be carrying out advance surveys as
22 has been said many times, and if that condition were
23 found that you have described, long lines of migrating
24 caribou intersecting the spread, I would recommend
25 a cessation of activity to allow them to pass.

26 Q So basically I was just
27 looking at the recommendations in the study that Mr.
28 Marshall produced to me, that Volume II of the
29 Northwest Project wildlife studies, their first
30 recommendation was this:

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1 "Construction of the south route in the Yukon
2 during March and April should be terminated
3 prior to the arrival of the migrating herds of
4 caribou."

5 That's essentially what you're saying then.

6 A That's correct.

7 We've been saying it since '71.

8 Q I just like to hear it
9 often.

10 MR. MARSHALL: Mr. Baly, you
11 also asked Mr. Jakimchuk a number of more specific
12 questions on particular subjects. One related to the
13 data on the snow conditions that were observed when
14 the deflection tests were being done. Mr. Jakimchuk
15 can respond to that question.

16 A I have Volume 5 before
17 me and there are numerous pages within that volume,
18 I am at page 159 now, numerous pages in which snow
19 data are provided; but to let me or to summarize the
20 conditions at that time, the mean snow depth in March
21 when we conducted one series of experiments was 28.1
22 inches in the general area of the Whitestone River,
23 while in May this had dropped to approximately 15
24 inches, as a mean snow depth. Snow characteristics
25 varied also between March and May. At the time of the
26 onset of thawing there was considerably more crusting
27 of the snow during the May period, also some snow-
28 free periods; while in March snow was not as crusted.
29 In terms of snow crusting conditions and snow density,
30 this would be impossible to summarize because it varied

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1 virtually with every measurement that was taken.

2 Q Can you elaborate on
3 that to indicate whether this 28-inch depth is small
4 or large in terms of other times you've been there
5 and other winters that you've conducted such studies?

6 A I think it was a winter
7 of fairly heavy snowfall.

8 Q So that's a heavy snow-
9 fall, 28 inches. Are you aware of -- what would be
10 your heaviest measurement?

11 A Now let me add this was
12 in our research area, you know, at the time of March.
13 This was accumulated snow.

14 Q What would be your largest
15 depth recorded?

16 A I don't know.

17 Q What significance would
18 you attach to a 60-inch depth of snow with respect to
19 tests and results that you've had from those tests?

20 A Well, I think a 60-inch
21 depth of snow is very, very significant to caribou.
22 I doubt if, depending once again on its density
23 whether they would be able to travel very far or even
24 survive, if it were soft snow.

25 Q Are you saying it's
26 something that doesn't occur?

27 A Oh, it does occur in
28 certain locations, but it does not occur throughout
29 the large areas, regularly the range. I'm sure it
30 does occur.

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Q You would agree then that

No. 4 on page 4 where you say:

"Caribou entering a cleared seismic line or
winter road will not be deflected if the angle
of approach is greater than 45 degrees."

That would not hold true for a situation where there
was a 60-inch depth of snow.

A If there were a 60-inch
depth of snow I would suspect them to make greater
use of a cleared area, if the snow were in fact
shallower there and packed there.

1 Q Well, if we apply this
2 to the route, the route, the access route going from
3 the Dempster to Old Crow, and if we look at that map
4 that we were looking at in Volume IV, the first map,
5 would you think that if the herd were migrating and
6 if they were migrating towards Old Crow on that winter
7 road, -- do you have the map?

8 A I am having a little
9 difficulty in finding it.

10 Q It is on page 18.

11 A Right.

12 MR. MARSHALL: Mr. Veale,
13 that is one of the other things that you asked him
14 to reply on, whether or not they have observed the
15 caribou making use of that winter road to Old
16 Crow --

17 MR. VEALE: Right, maybe
18 we could deal with that as we go on that one.

19 Q What I am proposing
20 to you is that the caribou might happen to use that
21 road and you can tell me whether or not they will
22 in your opinion, and they would come up to a point
23 in that pipeline and there would be a significant
24 snow depth, significant enough that they would find
25 it easier to follow the pipeline right-of-way. This
26 may be after construction, several years after, and
27 they follow it, and because of snow depth they stay
28 on it longer than they should if they wish to keep
29 their spring migration timing in tact. Would you
30 comment on that?

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1 A You are assuming a
2 60-inch snowfall now, is that correct?

3 Q Yes.

4 A Well, we have no
5 evidence of major deflections in any of the years
6 that we have been surveying caribou which includes
7 areas of seismic lines, in variable snow depths.
8 We have no evidence of major deflections taking
9 place even though there is a differential in snow
10 between the seismic line and the surrounding forest.
11 We have evidence that road, with prior vehicular travel
12 is preferentially preferred, and so it's -- the
13 most important thing seems not to be the depth
14 of the snow, but the texture of the snow, its weight
15 supporting characteristics.

16 Q Okay then, let's put
17 that into the equation then. You have a weight
18 supporting texture that is inadequate and they don't
19 want to go into it and they are following -- they
20 are following one of your winter roads, or they are
21 following the pipeline right-of-way, and let's say that
22 the angle --

23 A We have in fact -- that
24 was part of our experiment to see what happened when
25 that occurred and they did, when their angle to
26 approach -- in other words, when the road lay in the
27 direction that they were travelling, they certainly
28 made use of it. But as soon as it diverted away
29 from the direction of their travel, they kept on their
30 original course, and we have, in the appendix, or in

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1 the back of Volum V, photographs of this precise
2 type of thing.

3 Q And you are telling
4 me now that that is what happens in every case
5 regardless of snow depth or the ability of the
6 snow to support the weight of the caribou?

7 A I can't make that
8 kind of a blanket statement. We examined this in
9 one year under a certain set of conditions. I
10 couldn't go that far. But I could go to a historical
11 perspective and tell you that I am certain that
12 caribou have encountered very deep snows and variable
13 snow depths over the last hundred years and there
14 is no evidence to indicate that they have altered
15 their basic range as a result of that.

16 Q I suppose the unfortunate
17 thing is that we have only been studying them for
18 four of those hundred years?

19 A Well, that particular
20 herd has only been studied intensively over four
21 of the hundred years. As a matter of fact, no work of
22 this problem solving nature such as these cut line
23 studies has been carried out until the advent of
24 environmental concern over such things as pipelines
25 and roads.

26 Q In number four, this
27 talk about the angle of approach being greater than
28 45 degrees, there will be no deflection. Now, when it
29 is under 45 degrees, you are saying that there is
30 deflection. I gather that follows?

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1 A Yes, deflection that
2 -- and let me clarify that word, "deflection", there
3 is utilization of the seismic line or winter road
4 which could result in a deflection of a minor nature,
5 or that is what we observed, in any event. But
6 what the correlation is, the closer the line of travel,
7 the more likely the animals will utilize it, if
8 it lies closer to right angles, we had no recorded
9 observation of them utilizing an area where the
10 angle of approach was greater than 45 degrees.

11 Q So now if we go
12 back to the situation of the temporary winter road
13 from the Dempster to Old Crow and Spread Camp C,
14 I gather that your judgment would be that they would
15 be likely to use that winter road for travel?

16 A They have, I believe.
17 There have been observations of them using it for
18 travel, you know, over the years, certain segments
19 of it. We have observed caribou trails crossing
20 that winter road in the vicinity of the park, what is
21 known as a Parkin Camp airstrip. We --

22 Q Where is that?

23 A South of Old Crow in
24 the Eagle Plains.

25 Q That is an old seis-
26 mic camp, then, is it?

27 A It was an active
28 seismic camp, actually, during the time of our
29 studies. We have observations of trails crossing
30 this road and some, I believe, of caribou utilizing

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1 segments of the road over the years. But as I
2 stated this morning, we haven't made a particular
3 study of that particular road.

4 Q Did you have any more
5 comments on that area, Mr. Jakimchuk, because we
6 could proceed to what figures you have worked out
7 relating to the previous questioning.

8 A I don't have any
9 further comments.

10 Q Oh, I have -- sorry, there
11 is one question that perhaps we could deal with
12 now.

13 You had mentioned this
14 morning about trying that snow fence experiment that
15 Dr. Banfield suggested would be tried and that you
16 didn't find it successful. Now, is that the only
17 occasion on which a snow fence, or a fence was
18 placed across a migration route or a trail?

19 A Yes. It wasn't a
20 migration route. It was a seismic line that caribou
21 were travelling -- a small group of caribou were
22 travelling upon. It could be called within the
23 migration area. It is the only occasion.

24 MR. MARSHALL:

25 Mr. Veale, you asked
26 for some information as to the figures on yearlings,
27 and Mr. Jakimchuk can respond to that.

28 A Okay. I have a summary
29 here of the percentage of yearlings in the Porcupine
30 herd. As I indicated to you this morning, in 1971,
in May, at various crossing sites of the Porcupine

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1 River, we carried out composition counts at that time
2 in that year. We had 21.9% of the herd as yearlings.
3 Subsequent years, '72, '73, '74, and '75, we have
4 carried out these composition counts at the post
5 calving aggregation phase and you will see a reflection
6 of the different mixing character, I think, of the
7 herd. In other words, they are more thoroughly mixed
8 in the migration than they are at the post-calving
9 aggregation.

10 We have figures of 9%
11 yearlings for 1972, 6% for '73, 3% in '74 and
12 9% in '75. Now, I would hasten to point out to
13 you that we do not feel that these are the correct
14 actual percentages. They are indices that are
15 relative from year to year. They do not reflect the
16 actual percentage of yearlings in the herd. At that
17 time when these data have been taken, all of the
18 yearlings are not with the calving aggregation. Large
19 numbers are with the bulls, so one gets biased data,
20 but it does provide us with an index rather than an
21 absolute.

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1 Q Well, can you give us --
2 are you able to give us a mean index then, because it
3 seems to me there is quite a discrepancy between the
4 measurement at the Porcupine River and the other one .
5 Is it somewhere in between?

6 A There is quite a discrep-
7 ancy and that reflects the time of year that, you know,
8 that measurement was taken and the condition there.
9 It's more close to an accurate reflection of what
10 occurred in '71. For example, if in '71, if we had
11 done post-calving index of yearlings we would have
12 probably got around 10% or 11%. You know, you see what
13 I mean there.

14 Q I see, I see.

15 MR. MARSHALL: Mr. Veale, there
16 was one other matter you asked about, if you're
17 finished on this subject with Mr. Jakimchuk.

18 MR. VEALE: I would like to
19 pursue this a little more, Mr. Marshall.

20 Q Mr. Jakimchuk, have you
21 taken a look at these figures that you've got here,
22 9, 10, 6, 3 and so on? Have you related them back to
23 our previous discussion of annual kill by hunting and
24 predation and so on?

25 A I have not related those
26 except very generally. You know, I thought about that
27 while I was getting figures together.

28 Q What were your thoughts
29 on that?

30 A Well, I realized I'd have

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1 difficulty, since I have just said that the figures
2 are biased and do not reflect the actual, I'd have
3 difficulty in making extrapolations such as I think
4 you're seeking.

5 Q Well, it seems to me
6 that the extrapolation I'm seeking is one that would
7 be of a major interest in assessing the ability of
8 the Porcupine c aribou herd to maintain its present
9 level. Do you agree?

10 A It is of use and import-
11 ance in doing that. We have other indices available
12 to us, however. We know, we have estimates of the
13 numbers of the herd on an annual basis, that give us an
14 indication of how it's doing. We have data on the
15 productivity of the herd, and within certain limits
16 we are, you know, using these data as an index, we
17 can apply them. We would be able to make the type of
18 calculation you seek, but I prefer to do it on more
19 definitive data.

20 Q O.K., but that to me is
21 a method that you would say further research would have
22 to be done in order to make that kind of calculation,
23 to have any meaningful interpretation placed on it.

24 A No. If you wanted to know
25 precisely what the mortality was, one would have to
26 conduct some further intensive research. It all
27 depends on what you wish to know. If you wish to know
28 if the population is doing well, we can get it from
29 the data we have, in combination. We can make that
30 assessment.

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1 Q Well, what I'm basically
2 interested in is whether or not you can look at the
3 indices you have and determine what overall mortality
4 is in a particular year, or take an average. Then we
5 can determine how much you have to have in increment
6 to yearling recruitment to maintain present herd
7 sizes.

8 A Yes, in a general sense
9 we can, from our population estimates, from our
10 knowledge of the composition, we can give after the
11 fact, an assessment of what the mortality has been and
12 would be required by way of replacement to replace that
13 mortality.

14 Q Are you saying then that
15 you could do that now, or that you would wish to study
16 it further, or --

17 A Well, I can't do it now.
18 I would have to sit down and work around with a pencil
19 and paper and this type of thing. I've just told you
20 it's a question of basically addition and subtraction,
21 utilizing the sources that we have here, you know
22 what the -- you have an estimate of the total population
23 in one year, you have an estimate in the next year,
24 you can derive from that what the status is and
25 infer mortality. You might not be able to identify the
26 sources of that. That's a different problem entirely.

27 Q Well, Mr. Marshall, I
28 would be interested in seeing such a calculation done,
29 if it's just a matter of simple arithmetic, placing
30 the assumptions and qualifications on it.

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1 MR. MARSHALL: I may misunder-
2 stand the whole thing, but as I understand it, if you
3 know the size of the herd from year to year and you
4 know what the kill has been, you can conclude that
5 -- you have some idea what the birth rates are and
6 you can make some conclusions as to what's lost in
7 predation and that sort of thing. That may be sort of
8 generally useful, and on the basis of the evidence
9 that's been given today I suppose that anybody here
10 in the room could make that sort of guestimate. Is
11 that what you want done?

12 MR. VEALE: That's right. I
13 think it's that simple.

14 MR. MARSHALL: Well, I think
15 you can do it yourself. Really, I mean, if that's
16 all it is, why don't you subtract 5,000 plus --

17 M R VEALE: Well, if I present
18 figures to Mr. Jakimchuk, he's going to give me the
19 answers he gave this morning, that he really hasn't
20 looked at it and he can't agree or disagree. So what
21 I'm suggesting is that Mr. Jakimchuk give me his
22 figures.

23 MR. MARSHALL: Maybe I don't
24 understand it correctly, but can you do that sort
25 of thing, Mr. Jakimchuk?

26 A My figure, you are asking
27 me to work out a hypothetical situation right now, and
28 my figures would be my best estimate.

29 MR. MARSHALL: Sure, we'll do
30 that. Perhaps this is the appropriate time to tell you

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1
2 that when you were asking Mr. Jakimchuk about predation
3 this morning he indicated that Dr. Calef had a figure
4 on that in his report, and he doesn't. I checked with
5 Mr. Templeton who asked Dr. Calef who was here to-
6 day and he apparently hasn't included that. He's
7 at the hearings today.

8 MR. VEALE: So when would
9 you be able to provide that, Mr. Jakimchuk?

10 A I could have a look at
11 that this evening and provide it fairly shortly, I
12 think, if I understand what you are seeking correctly,
13 yes.

14 Q Well, what's your under-
15 standing then, just so we --

16 A Well, you would like me
17 to do a calculation that derives what the annual
18 recruitment of yearlings is, what the necessary annual
19 recruitment of yearlings is to maintain the Porcupine
20 herd.

21 Q And perhaps you could also
22 add, at that time or now, if you have any views on it, or
23 opinions on it, what a significant decline factor is.
24 In other words, when a herd -- you've indicated in your
25 evidence that you could tell in three years, whether or
26 not a herd is in a period of decline and what I would
27 like to know is what period of -- what indices or what
28 factor of decline would indicate that to you?

29 A I don't know if it would
30 help you. I don't know how sophisticated you want my

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1
2 calculations to be, but if you wanted to get my feeling
3 for the number of yearlings that should go into the
4 herd or should be in the herd at a given year to
5 maintain it at its present level, I would give you
6 an estimate right now of what I feel it is, and then
7 I could check it out a little further; but I would say
8 15 to 20,000 animals, 15 to 20,000 yearlings, in total.
9 I hope that may help you, bearing in mind I haven't
10 gone through all of the calculations.

11 Q O.K., let's take a look
12 then at that number. Basically you're telling me
13 that that range would cover all the predation, killing
14 by native people and so on, is that your position?

15 A That range appears to me
16 to be pretty well the point at which the losses are
17 balanced by the inputs.

18 Q Now, relating this to the
19 three-year period that you mentioned that you would
20 require to determine whether a herd was in decline,
21 what would be the decline? We're looking at a decline
22 in this 15,000 to 20,000 figure, I presume, or an
23 increase in the predation/ and so on. So what would that factor be?

24 A Well, we prefer to look
25 at a decline in terms of total numbers of a herd.

26 Q What would it be then?

27 A What would be what? A
28 decline or a significant decline, or --

29 Q A significant decline that
30 we could look at a three-year period that you have

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1 suggested you would need to determine that the decline
2 was taking place?

3 A O.K., I would say that
4 if a trend were established in each of the three years,
5 and I'm being subjective right now because there are
6 no criteria for this, but I'm giving you my interpre-
7 tation of "significance". If it were established that
8 in each of three years, there was a progressive decline
9 and this exceeded 20%, say, of the population, in each
10 of those years, now that's getting into complicated
11 mathematics and I don't know where I'm going to end up
12 with. I use the figure 20%, if it exceeded that, I would
13 be concerned.

14 Q Just a second, Dr.
15 Banfield. Does that tell me that your 15 to 20%, how
16 does that work out in gross figures? You've given --

17 A O.K., let me approach it
18 this way. Let's assume for a moment 100,000 animals in
19 the Porcupine herd.

20 Q O.K.

21 A We go out and do a
22 census next year and we find 90,000, well, that's
23 within the realm of survey error. It's nothing to be
24 too concerned with. If next year we go out and find
25 80,000, and on the third year we find less, and then
26 at that point I say we've got a significant problem to
27 look at.

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1 Q Thank you. That
2 gives me something to play with then in terms of
3 -- to recap your saying, that if you have a 100,000
4 and in one year it is reduced to 90,000 and the
5 next year it is reduced to 80,000, in the third year
6 there is another reduction, whether or not it is
7 10,000 or 5,000 you have got a problem then?

8 A I would be more concerned
9 with that, for example, than I would a reduction in
10 one year that went from 100 to 80,000 in other words--

11 Q The pattern has been
12 established --

13 A -- I am not concerned
14 about -- because there are natural fluctuations and
15 natural variabilities. It is the trend that is the
16 significant thing.

17 WITNESS BANFIELD:

18 Well, Mr. Jakimchuk
19 has mentioned some of my thoughts. I am just
20 very interested in knowing your goal. In management
21 of the Porcupine caribou herd is, it seems to me
22 that the goal you are heading towards is a population
23 of 110,000 to 140,000 in perpetuity and that you
24 see any change from that downward as significant,
25 and I am just wondering if that's the goal that
26 you think in the management of the herd should be
27 strived for.

28 Q Well, if I knew more
29 about caribou management, I might give you an answer
30 to that, but I don't, and my submission is that no
one does, from my discussions now with Mr. Jakimchuk,

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1 and that what my concern would be, it would be exactly
2 what Mr. Jakimchuk's concern is, that there would
3 be a trend of decline.

4 MR. SCOTT: Mr. Commissioner,
5 it might be useful to know Dr. Banfield's goal. He
6 has referred to that --

7 THE COMMISSIONER: That
8 is what I would like to know, Dr. Banfield. Mr.
9 Veale is proceeding on the assumption that it is
10 a good thing to keep the herd at its present level.
11 Certainly, everyone would agree that extinction
12 would be a very -- well, a calamitous outcome, but
13 what is your thought on that? You had something
14 in mind when you put that question to Mr. Veale.

15 A Well, my thought was
16 that it was no magic number. Personally, I look at
17 the range and what the range would support, and in my own personal
18 opinion, and this happens to be confirmed by a number
19 -- in the literature, a number of documents, is that
20 the current range is not overpopulated. In other
21 words, 100, -- 110, whatever the population is, is
22 not stressful at the moment as far as the range
23 is concerned. It might go up. But if at some
24 figure, if the population increases to some figure,
25 we will choose 200,000, there is going to be a
26 natural, dramatic decrease, and what -- I had a little
27 discussion -- you see, I am just trying to say a
28 100 -- I am trying to make sure that you don't think
29 the present population is some ideal or some magic
30 figure is

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1 some ideal or some magic figure that we must strive
2 to maintain. I had a little discussion with Mr.
3 Jakimchuk about this problem. I thought he and
4 you weren't quite on the same vibration or wave
5 length and he says that he had a phrase in there that
6 he thought his goal was to maintain the --

7 WITNESS JAKIMCHUK: Status
8 quo.

9 WITNESS BANFIELD: -- the
10 status quo, and I wondered whether you know what he
11 meant by saying "status quo". That doesn't mean --
12 he didn't really mean 110,000. He meant no
13 interference with normal fluctuations, which he has
14 just said.

15 Q So what you are saying
16 then, Dr. Banfield, is that if the wintering range
17 of the caribou is taken away south of the Dempster
18 Highway, then that doesn't concern you because that
19 means that the herd will just decrease to the
20 level that can survive in the remaining winter
21 range, is that what you are saying?

22 MR. MARSHALL : He didn't
23 say that when I was in the room.

24 A That would concern me,
25 naturally. I have another thought in mind. I
26 mentioned it before that there is an exchange between
27 these various herds and at the moment we have the
28 nearest related herd, the 40-Mile herd is, in fact,
29 in a very contracted situation, and as I mentioned
30 before, there is considerable thought that the present

1 flourishing of the Porcupine Caribou herd is at
2 some extent of the diminution of the 40-Mile
3 herd, and on to the west there has been some specula-
4 tion of interchanges with the Western Arctic herd
5 of Alaska.

6 Now, something can happen
7 where one herd goes up and the other one goes down and
8 before one pushes the panic button, one has to look
9 into that possibility.

10 MR. VEALE: Well, would
11 you respond to what I put to you, and that was that
12 if that significant portion of the wintering range
13 was taken away, what does happen to the herd? You say
14 you are concerned, but elaborate on that. There must
15 be more to it than that.

16 A Well, it is difficult
17 to come out with a hard judgment on it. I think
18 you are right that there would be a decrease in the
19 total population of the Porcupine caribou herd and
20 this would probably be reflected in a decreased crop
21 that was available to be harvested by the native
22 people, and that is what I meant. It would be of
23 concern to me. But you would have possibly more
24 concentrated use of one-half of the winter range, and
25 until somebody got out there and studied it, you
26 wouldn't know how long, or at what concentrated effort
27 of feeding that part of the winter range could support,
28 how many that winter range could support. Possibly,
29 it could support more than it had been supporting
30 before. These are the sort of variables.

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1 Q Well, if this
2 took place and the predation level remained constant,
3 in other words, the hunting by native people and the
4 normal predation by wolves, if that remained constant
5 and there was a reduction in the herd size because of
6 a loss of the wintering range, would that not have
7 the potential of a trend, a decline trend which
8 we have no control over?

9 A Yes, we have seen
10 this happen in various other parts of the Arctic.
11 Eventually, when the caribou get down to a certain
12 population level, they tend to be rather thinly
13 dispersed and the active migration routes -- or the
14 active migration is -- drops off. It seems that
15 caribou numbers and density are involved in the
16 very obvious pattern of migration, and north of
17 Baker Lake and in the area of the northern Keewatin,
18 historically there were very strong migration
19 patterns there until the population seemed to drop
20 off to a low level, at which they seemed to be
21 wandering, just wandering around more. However, if
22 you look at Ungava I studied the situation
23 when it was like that. One time I thought there were
24 only about 200 caribou left in western
25 and since that date they have -- when that happens
26 the wolves are exterminated, the hunters cannot
27 find them to hunt, they give up hunting, there is a law of
28 diminishing return applies, and this gives the
29 caribou some breathing space, some opportunity to
30 come back, and now, at this moment, the herds in the

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1 eastern Ungava have come back very strongly and
2 much surprised my estimates.

3 Q However, this is an
4 area that is unpredictable, I assume, would you
5 agree with that?

6 A Well, you are stuck
7 with making predictions in a very broad area, rather
8 than more precise predictions.

9 Q But it is a situation
10 though, where there is no adequate research that
11 we can apply to that situation? We don't know the
12 answers. Is that right?

13 A I think that I can
14 agree with you in general. We can extrapolate from
15 other areas. That is perhaps what we have to do.

16 Q Let me put this to
17 you -- don't keep moving that microphone back and
18 forth, Dr. Banfield --

19 A I would like to hand
20 it back to Mr. Jakimchuk, Mr. Veale.

21 Q What I would put to you
22 now, is that we may have a situation that we have
23 just been discussing, and you are on the academic
24 side right now of environmental things, and what I
25 put to you is the proposition that a bond be posted
26 by the applicant of a certain sum of money. Bonding
27 is something that happens in all industries on a number
28 of occasions, and if a certain event happens, that
29 bond can then be used. Now, what I am suggesting is
30 that a bond could be placed by the applicant, and if

1 a certain serious decline took place, or a decline
2 trend over a period of years, that the money would be
3 available to research the situation and have mitigative
4 measures or remedies and so on, to assure us that the
5 Porcupine caribou herd is not going to be seriously
6 diminished to the extent that it is a problem for
7 the native people who have been hunting the herd for
8 time immemorial.

9 MR. MARSHALL: I don't
10 think that's a bond, that is a tax, and I don't
11 really think that it is appropriate that a witness
12 respond to that sort of thing. Perhaps Mr. Horte
13 could indicate whether the company would want to
14 put up a sum of money that could be drawn upon in
15 the event certain things happened.
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1 MR. VEALE: Well, I would
2 certainly be interested in Mr. Horte's response to that,
3 but I'm putting it to Dr. Banfield because he is a
4 person who is in a position of making recommendations,
5 and I'm wondering if he feels that would be a recommen-
6 dation worth considering.

7 THE COMMISSIONER: Mr. Marshall,
8 let me suggest that there's really nothing wrong with
9 him asking any of these gentlemen what they think about
10 that idea. There may be some flaw, obvious to these
11 gentlemen that isn't obvious at once to the rest of us,
12 and they might point it out. Mr. Hemstock might feel
13 that he should leave it to Mr. Horte to discuss it,
14 I don't see why these other gentlemen couldn't. What's
15 the harm in it?

16 MR. MARSHALL: Well, sir, it
17 seems to me the meat of the idea is, that if there
18 appears to be some diminution in the herd that this
19 ought to be studied.

20 THE COMMISSIONER: And Arctic
21 Gas has to pay for it.

22 MR. MARSHALL: Everybody,
23 I'm sure, agrees that if there is some diminution that
24 that might be a good idea. As to the technique that
25 ought to be employed to finance the studies, we all
26 might have ideas on that, I suppose.

27 THE COMMISSIONER: I know, and
28 in due course I expect that when we get to final
29 submissions Mr. Veale and others might say, "Well, we
30 ought to do this," and you'll say, "We agree to that.

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1 We think you ought to recommend that to the government."

2 On the other hand, they may
3 say, "We disagree."

4 But as we are passing
5 through, so to speak, I really don't see anything
6 terribly wrong with trying it on for size, on one of
7 these gentlemen. I don't think there's anything much
8 to be gained, but if Mr. Veale wants their view, I don't
9 see anything wrong with it. What do you say, Mr. Scott?

10 MR. SCOTT: I hope the question
11 can be asked because, as I think I told Dr. Banfield
12 on the plane on the way out here, I intend to ask the
13 panel to let me know, to help me do my work, and tell
14 me what conditions I should recommend to you, at the
15 end of the Inquiry, and perhaps they can be thinking
16 about that for tomorrow, and Mr. Veale's question is
17 really that kind of question.

18 "What do you think of this as
19 a condition?"

20 I'm going to be a little more
21 direct and say, "You tell me the conditions that you
22 would impose."

23 But his question is of that
24 type and I hope it can be permitted.

25 MR. MARSHALL: My only point is
26 this, sir, that it's not a question that really relates
27 to Dr. Banfield's field of expertise. It's a question
28 that --

29 THE COMMISSIONER: Well he's
30 a student of environmental impact assessment and that

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1 may encompass the whole range of remedial measures.
2 At any rate, let's -- I think it's time to stop for
3 coffee, then we'll come back and take a look at this.

4 (PROCEEDINGS ADJOURNED FOR A FEW MINUTES)

5 (PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

6 THE COMMISSIONER: We'll call
7 the meeting to order again, ladies and gentlemen, and
8 you just carry on, Mr. Veale.

9 MR. VEALE: Thank you.

10 Q Dr. Banfield, we're
11 now at the position where we reviewed in the evidence
12 today, a number of the -- what have been referred to
13 as unavoidable inter-actions that the Dempster Highway
14 will have, the interior route will have, with respect
15 to the Porcupine caribou herd, and we've come to the
16 point where there are certain problems and stated that
17 more research is required, and I am putting to you a
18 proposition that the applicant, Arctic Gas, be required
19 to post a security bond, which is an analogy to a
20 performance bond that contractors often have to produce
21 when they are beginning a contract. Now, I could add
22 to this that it's been suggested by the Environment
23 Protection Board, it's not a novel concept by any means,
24 and they have suggested the following form:

25 "Prior to issuance by the agency,"
26 that would be a pipeline agency,
27 "of a notice to proceed, the permittee,"
28 that would be Arctic Gas,
29 "shall furnish the agency a surety bond or
30 other security, hereinafter called the bond,

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1 of such type and on such terms and conditions
2 as are acceptable to the agency,"
3 and this is the important part,
4 "in the principal amount of 1% of the capital
5 cost of the pipeline system."

6 Now I put that to you, would you make that recommendation
7 to the applicant.

8 WITNESS BANFIELD: Mr. Veale,
9 my service to the applicant has, up till very recently,
10 not been involved with making recommendations towards
11 terms or conditions or stipulations. My terms of
12 reference, and we discussed what they were, were in the
13 area of environmental impact assessment. It was only, I
14 believe, last June that the applicant did send to me
15 one set of proposed stipulations and asked for some
16 comments on them. I am very uncomfortable with your
17 question. I guess my answer would be, I probably would
18 not make that recommendation.

19 Q Well, you're a professor
20 of, I believe, environmental sciences or something of
21 that nature at Brock University, and as an academic
22 person who is interested in preserving the environment,
23 a person who is interested in ensuring that a large
24 scale development has incentives, built-in incentives
25 to ensure that the environment is protected, would you
26 not agree that that would be a wise suggestion, whether
27 or not you recommend it to the applicant?

28 A I think it's a very
29 reasonable recommendation.

30 Q How do you feel about

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1
2 that, Mr. Jakimchuk?

3 WITNESS JAKIMCHUK: Equally as
4 uncomfortable as Dr. Banfield, inasmuch as I would
5 reiterate that we have been making biological recommen-
6 dations, not suggesting regulations or policy matters
7 such as that, which to me that is. It's a difficult
8 thing to deal with, you know. I think we should monitor
9 the Porcupine herd and keep track of it, to try to ensure
10 that it isn't impaired. You must recognize, for example,
11 that there are in nature, very great fluctuations in
12 changes in natural populations and you know, at a real
13 gut level my feeling is that there are responsibilities
14 here that are shared by applicant, government, It would
15 be a little unfair, I would think instinctively, that
16 you hammer Arctic Gas for a natural occurrence and
17 that before you thought in terms of utilization of
18 bonds or penalties, that you'd have to establish cause.
19 So there are many sides to it. But let me say that
20 I'm in favor of keeping track of what happens and
21 that there be a response to doing something about an
22 identifiable situation or change.

23 Q You would agree, however,
24 that when you place money on the line that that would
25 be a strong incentive for the applicant to take the
26 reasonable environmental precautions that you're
27 proposing.

28 THE COMMISSIONER: Well, Mr.
29 Veale, I don't think there's any point in pursuing it.
30 That's argumentative, and you can argue it in your

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1
2 final summation. I don't think we're getting anywhere
3 at all.

4 MR. VEALE: O.K., thank you.
5 Perhaps would it be appropriate to ask Mr. Hemstock
6 if he has considered this and has any comments on it?
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1 MR. MARSHALL: He does
2 have some views on the subject, sir.

3 THE COMMISSIONER: Well,
4 if he didn't have any I don't suppose we
5 would require it, but let us have your views, Mr.
6 Hemstock.

7 WITNESS HEMSTOCK: Certainly.
8 I think there are two things that should be
9 considered. First of all, there is nothing wrong
10 with the posting of a performance bond. I think
11 that the difficulty really here is in the level,
12 and it should be reflected -- it should reflect
13 an amount which relates more directly to the kind
14 of damages and the kind of work that might have to
15 be done to repair those damages. The amount of
16 money talked about here is \$50 million, and that
17 held in bond for that long period of time is simply
18 an additional and an unnecessary cost to the
19 consumer.

20 I think it would be quite
21 reasonable to put it on a per spread basis and
22 a considerably lesser amount.

23 Finally, with regard to the
24 long term research, having to do with the principles
25 of long term survival of the herd, and perhaps matters
26 of academic interest, it seems to me that that is more
27 properly a job of the government agency responsible
28 for the management of the herd; and while I don't have
29 the figures available, I know that in the application
30 there are data available which indicate the tax

1 yield from this project to the Government of Canada,
2 and it is in terms of hundreds of millions of
3 dollars, and it seems to me quite appropriate that
4 some of the tax moneys could be directed to the
5 basic research that may be ahead of us in resource
6 development in the north, and that that is a more
7 proper way to go about it.

8 MR. VEALE: Perhaps we
9 can deal with the government of Canada when they
10 see the bill from the Inquiry and the bill from
11 all the research that has taken place to date and
12 see what they think of the revenue.

13 Q Dr. Banfield, you
14 made a statement in your evidence in chief that
15 -- you said:

16 "Many future developments in the North,
17 such as political evolution, population
18 growth, growth of service industries,
19 perhaps a railway, are quite unpredictable
20 at present. I think that each major
21 development should also be analysed for
22 its social and environmental impact when
23 each is proposed."

24 Now, Mr. Bayly dealt with some of these things yes-
25 terday, and I just had a question as to whether
26 or not you would include looping in that context?

27 WITNESS BANFIELD: Yes,
28 sir.

29 Q Mr. Jakimchuk, turning
30 now to the coastal route. As I understand it, you

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1 have chosen the coastal route as you predict that there
2 will be less contact and interaction with the caribou
3 than on the interior route, is that fair?

4 WITNESS JAKIMCHUK: That is
5 correct.

6 Q Would you agree that
7 there exists baseline data, some your own and some
8 other people's, that wintering by caribou does in
9 fact take place on the coastal plain in the location
10 where the line would be constructed?

11 A Wintering which I have
12 described myself in testimony, yes, does occur on
13 portions of the northern foothills of the Richardson
14 Mountains and on areas of the coastal plain, not
15 the entire coastal plain.

16 Q But I think it was in
17 the winter of '73 - '74 that in fact there was a
18 caribou wintering in those areas around the Richardson
19 Mountains and right over to, what river would it
20 be?

21 A The Blow River.

22 Q The Blow River, and
23 the figures were approximately 6,000, is that
24 correct?

25 A 5,000 to 6,000.

26 Q Now, I have been
27 advised that there were some figures relating to
28 1950 and a report that in that year -- there was a
29 figure of 20,000 caribou which wintered in that
30 same area, are you aware of that?

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1 A I would have to
2 refresh my memory. That probably comes from Kevin's
3 report which I think Dr. Banfield has a copy of.
4 I would have to refresh my memory on that.

5 Q Well, if that in fact
6 did take place and there is a report on it --

7 MR. MARSHALL: Excuse me,
8 Mr. Veale, do you have a reference for that? It seems
9 to me that if you are relying upon something in
10 support of that statement you ought to --

11 MR. VEALE: I agree, Mr.
12 Marshall. I have no documentation. The only thing
13 that I have is that I have been advised that a
14 person by the name of McEwen in 1952, indicated that
15 in 1950 there were 20,000 caribou on the coast. Now,
16 I have nothing further than that.

17 MR. MARSHALL: So you
18 don't know who this Mr. McEwen or --

19 A Well, I know who
20 Dr. McEwen is.

21 MR. SCOTT: Well, Mr.
22 Commissioner, didn't Mr. Jakimchuk himself say
23 yesterday that there were -- what was it -- I think
24 he said there was 10% or 14,000 on the coastal
25 plain in the winter of '74 - '75 --

26 THE COMMISSIONER: 5% to
27 10% I think.

28 A I indicated that
29 up to 10% of the herd, depending on the population in
30 a given year, has been documented wintering in the

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1 northern area -- not all on the coastal plain, I might
2 add, but from the limited data that we have for this
3 past winter, it appears that the figure was in the
4 order of 10,000 all the way, including the area
5 from Herschel Island to the northern Richardsons.

6 MR. VEALE: Well, to pursue
7 that point, precisely what is your recommendation
8 to Arctic Gas in the event that there is a large
9 number of caribou wintering, and I put it, right in
10 the line where the construction of the pipeline
11 is taking place? What is your advice in that
12 circumstance?

13 A Well, I covered this in
14 testimony yesterday. I gave a number of points and
15 if you will just indulge me for a minute here, I
16 may have a precise recommendation right in our
17 Biological Report Series.

18 THE COMMISSIONER: Yes.

19 MR. VEALE: What volume
20 are we in?

21 A I am looking at
22 Volume 5, pages 174 and 175. Starting on page 174 is
23 our precise recommendations for that eventuality or
24 possibility. I could read them if you wish, but
25 as I say, I covered it yesterday and it is here in
26 the report series.

27 Q Is this at the bottom
28 of page 174?

29 A It starts near the
30 top with, "Since large numbers of caribou do not

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1 normally spend winter in the vicinity of the
2 proposed corridor, the following is largely a
3 contingency plan." Well, as you can see --

4 Q Well, that relates to
5 the Interior Corridor as I read page 174. Are you
6 applying that --

7 A The recommendations are the
8 same. At point two on that page it says:

9 "If a significant number of animals are
10 found in the area,..."

11 and then it starts from there, and that would
12 apply equally to interior or a coastal route.

13 Q Okay, so you are taking
14 the position then that you would not recommend a
15 shutdown under any circumstance of that type of
16 occurrence?

17 A Well --

18 MR. MARSHALL: Surely
19 you have to go through the recommendations he has
20 referred us to there. They are in the exhibit.

21 MR. VEALE: Can you answer
22 my question, Mr. Jakimchuk?

23 A I recommended a shut-
24 down with respect to spring migration to you earlier
25 this afternoon, I think. In the event that there
26 was some wintering taking place on the coastal
27 plain and the northern foothills, as we have found in
28 the last two years, if that occurred, I think it is
29 reasonable to try to implement these recommendations
30 that I stated, but I can't see recommending a shut-

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1 down, otherwise it would be -- I don't think that it
2 would be feasible from the applicant's standpoint to
3 recommend a shut down. You might as well recommend that
4 no pipeline be built because the animals are likely
5 to be in general vicinities over a period of months.
6 Then one must assess what are the implications of
7 this and my own view is that because of the behaviour
8 of caribou during the winter period, random type
9 movements, general drifting from area to area,
10 that the implications of an interaction are not
11 as serious as they are, say, with a spring migration.
12 You are dealing not with large, dense herds that
13 are travelling purposely on a migration. You are
14 dealing with scattered animals. You are dealing
15 with animals moving here and there and more or less
16 casually. So that is where it stands. I say, take
17 precautions, yes.

18 Q But if; you felt that
19 taking the precautions would result in the caribou
20 moving to a less desirable habitat or something that
21 would lead to a reduction in fat reserve with
22 the ultimate consequence of a winter kill occurring, you
23 would then, I presume, recommend a shutdown?
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1 A If I anticipated a
2 major winter kill, I would consider that very serious.
3 But let me elaborate on that a little bit. You see,
4 in biology there are compensatory factors that one
5 must always consider, such as take mortality, for
6 instance, from wolves. There are more wolves when there
7 are more caribou, and fewer wolves when there are
8 fewer caribou. They tend to compensate each other.
9 Now the reason that the caribou -- and we don't expect
10 them to winter in that area; you know, it was an
11 unexpected thing in the Northern Richardson and on the
12 Coastal Plain -- but the reason that they're there is
13 that, there is forage available for them and there has
14 been no incentive that has forced them to ^{what is} a more normal
15 and characteristic winter range in the taiga to the
16 south. So that the reason they are there, they are
17 essentially capitalizing upon an opportunity, that in
18 years of heavy snow is not available to them. So I
19 say that represents a type of compensation because
20 you know that the reason that they're there is that
21 the conditions are favorable for them. It's not like
22 dealing with a restricted sheep range or a mule deer
23 range, which may be very small in area. So that there
24 are opportunities for them to seek other forage sources.

25 Now I say that this possibility
26 of winter kill owing to depletion of that reserve is
27 in large part compensated for by the alternatives
28 available to the caribou. I hope I --

29 Q Well yes, but I appreciate
30 that elaboration because the occurrence that I would be

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1 concerned about in that case is that the alternative
2 you speak of is not available because of heavy snow-
3 fall.

4 A We have never yet recorded
5 that alternative not being available, inasmuch as
6 only a segment of the herd has wintered in this area
7 we're talking about. You know, this maximum/^{upper}limit of
8 10%, so I have no reason to believe that there are not
9 alternatives available.

10 Q If it were the case,
11 that would be a serious problem though.

12 A If there were no alterna-
13 tives available and the caribou were unavail~~able~~ to get
14 forage, that would be a serious problem, but that is
15 a very hypothetical type , I think, tenuous type
16 case in fact.

17 Q On the basis of your
18 four years of research?

19 A On the basis of more
20 than that, on the basis of the historical perspective.
21 You talked of 20,000 caribou in 1950. Well, that's
22 still not, or was unlikely not the entire herd. The
23 rest of the herd must have been elsewhere. We have more
24 than our own four years of research. We have a historical
25 perspective. We have accounts from native peoples in
26 villages, we have, you know, as to where they winter
27 and so on.

28 Q Now you're aware that
29 there's a strong desire by the applicant to use snow
30 fences for the accumulation of snow in order to prepare

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1 and maintain the winter road that will be used alongside
2 the ditch, and I assume that you are aware in fact
3 that that is the preferred method.

4 A I am aware of the
5 client's desire, if there is insufficient snow to
6 accumulate snow by snow fences. I don't really know
7 whether that's the preferred method or not; Mr.
8 Hemstock could elaborate on that.

9 Q Maybe he could. I have
10 a direct reference that would help out there. It's in
11 Volume 34, and it's the evidence of Mr. Williams, page
12 4483, and if we begin at line 22, he's in his discussion,
13 he says:

14 "They,"
15 meaning the snow fences,
16 "obviously would be oriented at right angles to
17 the direction of the prevailing wind, but they
18 do not have to be continuous. Gaps could be left
19 and we would hope to rely fairly heavily on the
20 Yukon Slope to the use of snow fences. It's
21 certainly more economic than hauling snow or
22 water from lakes. In that particular location
23 it is the preferred method, yes."

24 A I would accept that.
25 It's just that I've heard, you know, of manufacture of
26 snow. Mr. Dabbs discussed that.

27 Q In the light of that
28 statement, what research have you conducted with respect
29 to the use of snow fences? And its implications for
30 caribou or muskox, too?

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1 A We have not conducted
2 any field research on that general subject, with the
3 exception of that one trial or that one experiment
4 that we -- where we had a response of what happened
5 when caribou encountered a length of snow fencing. We
6 have not delved into that in detail. We have thought
7 about the potential problem.

8 Q Would you say that more
9 research is required in that area? That's a final
10 design matter?

11 A Well, there is certainly
12 some additional information that I would like to develop
13 or see developed on that. For example, it's my impression
14 that the prevailing winds may be of the nature -- and
15 this is the type of thing I would like to know, so that
16 one is not going east-west across the slope, one is
17 orienting these generally north-south -- that type of a
18 I would like to know the actual proposal as defined,
19 because there can be snow fencing that is more of an
20 obstruction than other snow fencing.

21 Q At this particular point
22 then you're not aware of the direction of the prevail-
23 ing wind on the North Slope?

24 A Well, not for all areas
25 of the North Slope I am not.

26 Q So at this point you have
27 not made any recommendations to the applicant relating
28 to the length of the snow fence, its angle, or its
29 frequency?

30 A We have made some general

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1 recommendations on that and we have stated that it's
2 preferable that they be oriented north-south in short
3 sections rather than a continuous east-west snow fence.
4 We have stated that if a continuous fence was required,
5 I may have to check the actual figure but that gaps
6 be left at intervals, and I think -- I don't recall
7 exactly at what intervals, but we have said that so
8 that passage would be allowed.

9 Q So you can't give me any
10 further details on that? In other words, how long
11 would the fence be?

12 A Well, that depends on the
13 interval of the gapping. I don't believe I would like
14 to see -- well, I have to check somewhere back in my
15 memoranda on that. I would for example not want to
16 see continuous fence that presented an obstruction for
17 more than say half a mile.

18 Q Would you agree that
19 you will have to run an experiment, a research
20 experiment on the coast prior to giving complete
21 advice and recommendations to the applicant?

22 A I don't think that is
23 absolutely essential to do a field program on the
24 coast.

25 Q Would it be fair to say
26 that you're going to use the trial and error method at
27 the time of construction?

28 A No, that wouldn't be
29 fair to say, I don't think. For one thing, if we had
30 indications that there -- we have also recommended,

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1 incidentally, removal of the snow fencing prior to
2 the spring migration, which I think is an important
3 thing. You see, that's my main concern, and we have
4 recommended that removal and we understand that that
5 would be the case. I'm more concerned over the
6 implications of that than I am over the implications
7 of a possible wintering caribou encountering a snow
8 fence with regular gaps in it.

9 Q Well, what are you saying
10 then? I've put two things to you.

11 1. Is that an experiment would have to be conducted.
12 You said that's not necessary.

13 2. I said you could use the trial and error method at
14 the time of construction. You said you won't do that.

15 What do you intend to do?

16 A We intend to make recommen-
17 dations on the spacing of snow fencing and we intend, at
18 least we intend to do additional work on this. I was
19 distinguishing between field work with live caribou
20 and final design type work. As I say, we would like
21 to have some more details on proposed orientation,
22 location of fencing, the height of fencing, and we
23 will take that information and make judgments as to
24 whether it might be a problem, and in what areas it
25 might be a problem. That's the type of work we would
26 do, we would want to do, yes.

27 Q Well, would you do live
28 field work?

29 A I haven't thought about
30 that.

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Cross-Exam by Veale

1 Q You've mentioned in
2 questioning from Mr. Bayly about a 4,000 square mile
3 area which I understand -- and I'd appreciate your
4 clarification -- to be the calving ground and the
5 post-calving aggregation ground. Is that correct?

6 A Post-calving aggregation
7 area is within that 4,000 square mile general calving
8 area, yes.

9 Q So you wouldn't reduce
10 then the square mileage for the calving area as a
11 result of that. I would put to you the figure of
12 1,800 square miles to 2,000 square miles as the actual
13 calving area.

14 A Well, it varies, I might
15 say, from year to year and I did respond to Mr. Bayly
16 by saying that we have a general area, within which
17 calving occurs. The actual extent of the area occupied
18 in any given year might be quite different in its
19 area and in its location. Thus one can sometimes get
20 the entire calving, virtually the entire calving
21 occurring in Alaska; at other times calving caribou
22 or calving takes place all the way from the North Slope
23 of the Yukon into Alaska. It is not a fixed rigid area.
24 But I'm saying that this general calving area comprises
25 approximately 4,000 square miles within which, in any
26 given year, calving takes place.

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1 Q Do you have any concerns
2 relating to that calving area, the general area
3 shifting for some reason?

4 A Well, this specific
5 area has shifted from year to year.

6 Q Now, does it shift, in
7 the process of that shift, does it shift to less
8 desirable calving areas?

9 A No, it is a shift within
10 a general desirable calving area, within.

11 Q If it shifted outside
12 of the general desirable calving area for some reason,
13 maybe associated with pipeline, maybe not, would you
14 predict that that would have some implications for
15 the migratory movements, in other words, they would
16 be foreclosed from their normal migratory movements and
17 might take different routes south?

18 A Well, if something of that
19 nature were to occur, those would be obvious implica-
20 tions.

21 Q Has your research in-
22 dicated that when the calving ground shifts within
23 that general area, that there has been a consequent
24 reduction or increase in number of calves produced?

25 A There has been a
26 variation in number of calves per hundred cows from
27 year to year. I think a minimum of 47 calves per
28 100 to 66 per hundred.

29 Q Right.

30 A Whether it is correlated

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1 with the shift or other factors, I don't think we can
2 identify what the cause of that is. It is just a
3 correlation. In other words, the number of calves
4 produced depends on the number of cows that are
5 mated the previous fall, that is a factor as well.

6 Q And another factor
7 could be, and you haven't determined this at this
8 point, but it could be that they were in a calving
9 ground less conducive to the calving process?

10 A We have no evidence
11 that, in the areas in which they have calved, that
12 they have been calving in a less conducive area.

13 Q You have no information?

14 A We have no evidence that
15 this variation that has taken place in where they
16 calve has affected the calving success detrimentally.

17 Q Have you in fact
18 gone to those various calving areas and done vegetation
19 or terrain studies to verify that position?

20 A No, we haven't.

21 Q Dr. Banfield, you have
22 mentioned the 40-Mile caribou herd frequently, and I
23 was wondering whether you would consider it advantageous
24 to have a study done, further research done on that
25 herd to determine the cause of its decline?

26 WITNESS BANFIELD: I believe
27 such studies have been undertaken by Alaskan game
28 people. I think, just to give my recollection of the
29 findings, for a number of years the herd migrated
30 westward into the White Mountains, immediately north

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1 of Fairbanks, for a number of years and there is a
2 ski highway there and they were very heavily
3 hunted from the highway and as I recall it, that was
4 considered an important factor in their reduction
5 and withdrawal to the eastward, towards the Yukon-
6 Alaskan boundary, and also, again, there has been
7 speculation in reports by Alaskan biologists that
8 many may have joined the Porcupine caribou herd.

9 Q The point is that
10 it would be instructive to have full scale research
11 done on that herd and be of advantage in considering
12 the Porcupine caribou herd and impacts on it?

13 A It would be first
14 important to know what studies are being undertaken
15 by the Alaskans and to integrate your efforts with
16 them. There is no use duplicating studies. I believe
17 they have almost continuous studies on a rotational
18 basis of their various herds. I can inquire into
19 this and give you a more positive answer at a later
20 date, perhaps tomorrow morning on this.

21 Q That would be much
22 appreciated, Dr. Banfield, because I believe it was
23 Dr. Geist's evidence in Whitehorse that indicated that
24 that herd used to migrate in the area of Whitehorse
25 and Carcross and crossed the Yukon River and
26 circled up by Dawson and no one has adequately ever
27 explained the withdrawal of that herd and its reduction
28 to present size.

29 A I was there in Whitehorse.
30 I remember him mentioning that. That was a long time

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1 ago, indeed, as you know, Carcross comes from
2 "Caribou Crossing" and it is sort of that type
3 of evidence.

4 Q I hate to say this,
5 but it was within your lifetime, I believe?
6 (LAUGHTER)

7 Well, it was the
8 1930's, though during which the decline of the
9 caribou herd began?

10 A Well, I really '
11 wasn't studying caribou in 1930, sir.

12 Q Mr. Jakimchuk, just
13 to clarify a minor point. On page two of your
14 supplementary evidence -- no not page two, it would
15 be page three. You have stated that "only the
16 applicant has conducted experimental studies, not
17 only in caribou but on other species as well."
18 Am I correct in saying that that applies only to
19 Canada? As I understand it, our Alaskan friends,
20 David Klein and Lent and so on have done
21 extensive experimental studies.

22 WITNESS JAKIMCHUK: Not on
23 the Porcupine herd.

24 Q Oh, you are referring
25 to the Porcupine herd in that.

26 A And I am referring
27 to -- let me reread this .

28 Q Page 3.

29 A Yes, in association
30 with this impact appraisal, is what I was referring to.

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1 Q So you are limiting
2 it to the Porcupine caribou herd, that is certainly
3 agreed?

4 A Yes.

5 Q YOU have also stated on
6 page one, the bottom paragraph, you said:

7 "However, in testimonies to date, no
8 clear preference has been advanced for
9 a routing with respect to caribou."

10 Now, I may misunderstand the intention of that state-
11 ment, but I thought there was quite clear preferences
12 indicated by Dr. Geist, Mr. Weedon, From Alaska,
13 for the Fairbanks corridor.

14 A Yes, that statement is
15 a little bit too general. I had in mind when I wrote
16 that, the testimony of Dr. Cowan on behalf of the
17 E.P.B. which I read and he did not really come out
18 as did Dr. Wilimovsky and state whether or
19 not he preferred the interior route or the coastal
20 route. In reading Dr. Geist's testimony, he did
21 state a clear preference and I just can't recall
22 precisely what Dr. Weedon said.

23 Q On page 10 of your
24 evidence as well, there is a statement that I think
25 has been covered in previous evidence, but just to
26 clarify it for the record. YOU have indicated that
27 direct killing is a function of access, but a control-
28 able variable through regulation.

29 Now, I would ask you to
30 accept this wording: direct killing is a function of

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1 access and theoretically control through regulation
2 but often not politically possible.

3 That has been demonstrated
4 by the Alyeska Pipeline, I would submit.

5 A Yes, okay. I think
6 that I could accept that. It all depends on the
7 level of enforcement effort.

8 Q Now, once again on page
9 13 I have another little quibble. It would be about
10 the fourth paragraph. You have indicated "no
11 activity would be underway during the calving
12 period." That is presented as a statement of
13 fact, but really you are saying, you know, no activity
14 would now be anticipated to be underway during the
15 calving period. There is quite a distinction there.

16 A I am basing that on the
17 acceptance by the applicant of our recommendation and
18 if you wanted to quibble, I suppose your wording
19 is just a little bit more --

20 Q Precise --

21 MR. MARSHALL: Well, it is
22 the opposite. He is saying that there won't be, you
23 are saying that there will be, and it is not a
24 quibble. It is a reversal.

25 MR. VEALE: WE don't know
26 what there will be.

27 MR. MARSHALL: Well, you
28 can postulate anything you like --

29 MR. VEALE: Well, you are
30 postulating that there won't be --

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1 MR. MARSHALL: Not postulating.

2 The witnesses have come forward and have said what the
3 intention is. Now, that seems to me a totally
4 different situation, giving commitments as to what
5 the company is going to do or not do.

6 MR.VEALE: Yes, I appreciate
7 that that is your intention, and that is Mr. Jakim-
8 chuk's intention.

9 MR. MARSHALL: Incidentally,
10 just getting back to this point, Mr. Veale, about
11 the other witnesses indicating a preference on a
12 routing, I had thought that that was in the context
13 of, as between interior and coastal routes, maybe I have
14 misunderstood the evidence.

15 MR. VEALE: I think you
16 did misunderstand the evidence. I think that there
17 was a clear preference stated that the Fairbanks
18 corridor was preferable to all three or four. In
19 any event --

20 THE COMMISSIONER: Oh, excuse
21 me. Dr. Jakimchuk said that subject to certain
22 qualifications that he laid out this morning, that he
23 preferred the Fairbanks corridor.

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1 MR. MARSHALL: I think there,
2 sir, he's talking about a system for -- that was
3 postulated by my friend, to deliver Alaskan gas only.

4 THE COMMISSIONER: Oh yes, yes,
5 exactly, we understood that, and the witnesses who
6 spoke in Alaska who preferred the Fairbanks corridor,
7 as I understand it, did so on the basis that it was
8 for the delivery of Alaskan gas only. I think that
9 I --

10 MR. MARSHALL: I would concur
11 in that. That's right.

12 MR. SCOTT: Every time Mr.
13 Marshall says a routing I remember it was gas.

14 MR. VEALE: Q Mr. Jakimchuk,
15 you stated in your evidence that the Old Crow Flats
16 is an ecologically sensitive area. Would you just
17 elaborate now for us why you have reached that
18 conclusion?

19 WITNESS JAKIMCHUK: Well, there
20 are a wide range of considerations. I think it's
21 somewhat unique. As a matter of fact, if you look at
22 a map at that scale the Old Crow Flats stands out, it
23 is characteristic. It is my understanding that it's
24 a very large glacial lake basin. My understanding, it
25 has high ice content soils, very fine-grained soils
26 which make it susceptible to mechanical disturbance.
27 It's ecologically important as a producer of fur-
28 bearing mammals. Caribou migrate through the area. It's
29 important in other disciplines as well, for birds, so
30 on that basis I say it's an ecologically sensitive area.

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1 Q Would you say it's
2 ecologically sensitive to the extent that there should
3 be no seismic work conducted there, that that would be
4 part of the assumption you are making with respect to
5 a routing of the interior route?

6 A That wasn't part of my
7 assumption actually on the interior route. I say
8 it's ecologically sensitive, seismic work or no
9 seismic work, it's an important area. I would prefer
10 not to see development within that area.

11 Q Dr. McCart, the crossing
12 of the Old Crow River --

13 WITNESS MCCART: Yes.

14 Q -- could you tell me
15 whether you've been advised if winter blasting will
16 be undertaken at that crossing?

17 A No, I haven't. I should
18 point out that on the occasion that we looked at it
19 during the winter the crossing was dry. So it's not
20 going to affect fish populations.

21 Q So that is a crossing
22 that you would recommend that blasing could be done
23 without detriment to the fish population.

24 A If certainly it's dry
25 in the winter of construction it would seem to me that
26 it's unlikely to have any effect on fish populations.

27 Q That would be an extremely
28 important area, would you agree, in the sense that
29 people from Old Crow would do fishing below that at
30 the confluence of the Porcupine and Crow Rivers?

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Cross-Exam by Veale

1 A The confluence, yes, I
2 would presume would be relatively important, yes.
3 Incidentally, I should point out that I am not certain
4 that blasting is contemplated at the Old Crow River.

5 Q In your evidence you've
6 indicated that the prime route from a fisheries point
7 of view, I assume, is preferable to the interior route
8 based only on your comments about the Alaskan portion
9 of the interior route. Is that correct?

10 A That's correct, yes.

11 Q Well, I put to you that
12 there would be another consideration for the interior
13 route not being the desirable route between those two,
14 and that would be that there is a major international
15 salmon run that goes up the Porcupine, and I presume
16 up the fishing branches and so on, and that each
17 stream that the pipeline crosses runs into the main stem
18 of the Porcupine. Now does that not place the interior
19 route qualitatively on a different level than the
20 rivers on the prime route?

21 A No, actually as far as
22 I know, almost all of that spawning, the spawning beds
23 are considerably upstream of the point where the
24 pipeline diverges from the Porcupine and I don't see how
25 conditions at the crossings of tributaries in which
26 these chum salmon don't occur are going to affect the
27 upstream migration of that salmon run up to the fishing
28 branch.

29 Q It causes you no concern
30 then.

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1 A No, not unless it's
2 difficult to see how the upstream movements of the chum
3 could be affected by the presence of a pipeline on the
4 small tributaries to the Porcupine.

5 Q Now, if we consider the
6 other fish populations in the rivers, other than the
7 salmon, and I put the question again to you, does that
8 make any difference? Do you find any qualitative
9 difference?

10 A Are we speaking of the
11 Porcupine drainage?

12 Q Yes.

13 A Well, my general feeling
14 is that as far as a comparison of the two routes in
15 Canada goes, the difference probably between the two
16 routes is the presence of the Arctic char in the
17 North Slope streams, as opposed to their absence in the
18 Porcupine drainage, and while I think that certainly
19 a pipeline can be constructed on the North Slope without
20 damaging Arctic char populations, or having any
21 detrimental effect on them, I think that those popula-
22 tions are somewhat more sensitive possibly than those
23 which inhabit the tributaries of the Porcupine.

24 Q Dr. Gunn, I believe I've
25 brought the references with me but perhaps you may
26 recall there was a 1972 study, Volume 14 of the Biologi-
27 cal Report series, and I'm referring to chapter 4.

28 WITNESS GUNN: I have chapter
29 4 and Volume 14.

30 Q My page number doesn't

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1 seem to coincide. I have page 227, and I wish I could
2 find the particular subject. It relates to -- it was
3 a statement made and I have a quote here that I wish
4 I could direct your attention to in the volume itself,
5 but the statement was that:

6 "Continued harassment over a period of several
7 days may have caused the birds to reach a thresh-
8 old level of tolerance."

9 Now, I think the study that was being conducted in
10 this case --

11 A That is on page 227,
12 but it's in chapter 5.

13 Q It's in the discussion
14 section of that page, you see the statement:

15 "Continued harassment over a period of several
16 days might have caused the birds to reach a
17 threshold level of tolerance which would not
18 be obvious with two separated days of disturbance.
19 But it was not possible to test this possibility
20 within the framework of the present experiment."

21 Now, that comment was made in that report. In the
22 '73 study which is chapter 2 of Volume 29, and the
23 abstract of that section, the abstract at the bottom
24 says that:

25 "It was concluded that similar disturbances made
26 in 1972 for study purposes did not affect the
27 number of birds using the area for moulting in
28 1973. Helicopter, No. 3, helicopter overflights
29 didn't drive birds from the area,"

30 and so on. Now, I put to you that there is somewhat

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1 of a conflict in those two reports, and you may be
2 able to resolve that for us now. Was there a different
3 type of experiment conducted in 1973 which would allow
4 the conclusion to be different than the one in 1972?

5 A As I recall the studies
6 in '73 were a little more elaborate than the ones in
7 '72. They lasted a longer time, perhaps because
8 we felt the ones in '72 were not as complete as we
9 would have liked them to be; but I don't see any con-
10 flict in the results.

11 Q In other words, the
12 1972 one which talked about the continuous harassment
13 over a period of several days could cause the birds to
14 reach a threshold level of tolerance, are you telling
15 me that in 1973 you did precisely that and you determin-
16 ed that they didn't reach that threshold level?

17 A Well, if we turn to the
18 methods in that chapter it will tell us exactly how
19 many days we did disturb them. Now on page 5, under
20 "Methods" it shows that the study ran from August 2 to
21 15, and that in the early part of the study we collected
22 evidence on undisturbed birds and ^{then} we disturbed them.
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1 Q It doesn't specify whether
2 or not the disturbance was of a nature the 1972 report
3 said couldn't be performed.

4 A The 1972 one says that,
5 "Continued harassment over a period of several
6 days might have caused the birds to reach a
7 threshold level of tolerance which would not
8 be obvious in two separate days."

9 Q Right.

10 A It would be in there.

11 Q I thought the reference,
12 yes, several days in a row of the same harassment.

13 A All right, on page 6 the
14 first paragraph at the top it says:

15 "At H.W.,"

16 which was a point of observation,

17 "from August 10 to 12, a Bell 206 helicopter
18 was used to disturb the birds. Flights were
19 made at hourly intervals between 10:30 and
20 18:30 hours on August 10, between 8:30 and 17:30
21 hours on August 11th, and between 8:30 and 19:30
22 hours on August 12th."

23 So those are three days in a row in which the disturbance
24 took place hourly through the day, and we consider that
25 a pretty intense form of disturbance.

26 Q Well, from your conclusions
27 then, in the abstract, is it really relevant or signi-
28 ficant to conclude that the number of birds that used
29 the area for moulting in the next following year didn't
30 change significantly, and isn't it possible that the

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1
2 figures could in fact increase substantially in the
3 following year despite the harassment, and it would
4 really have no relevance to the harassment at all?

5 A What you're saying is
6 that as far as we could tell, the disturbance experi-
7 ments that we did in '72 did not appear to affect the
8 number of birds using the area in '73. Now there
9 are obviously natural variations but we were unable
10 to detect any effect from one year to the next.

11 Q Well, I'm asking you
12 whether you consider that to be a significant conclusion.

13 A It's a conclusion in a
14 negative sort of a way. If there had been a consider-
15 able difference we would have shown concern about it,
16 and followed it up. There was not a condition that
17 gave us concern.

18 Q Well, did you go back in
19 1974 to determine the effect of your disturbances in
20 1973?

21 A No, we did not.

22 Q So I take it then that
23 you've done ^avery short-term study and you would not
24 make any projections for long-term disturbance.

25 A Depends how you define
26 "long-term disturbance". If you're defining it as
27 a great number of days in one year, or disturbance
28 over a period of years, it makes some difference.

29 Q Yes, well I would define
30 "long-term disturbance" as over a period of years. I

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1
2 believe that's what we're concerned with on the North
3 Slope.

4 A No, we do not have any
5 results that would indicate the effects of long-term
6 disturbance.

7 Q Could you tell me the
8 importance of baseline data, in other words, what
9 happens if there is a large discrepancy or error in
10 baseline data? What effect does that have on your
11 recommendations?

12 A I think you have two
13 questions there. Would you like me to respond to the
14 second one? The question is, what happens if there
15 is a large discrepancy or error in the collection of
16 baseline data? Well, this is -- we are theorizing now
17 but I would say, that depending on the size of the
18 error and the significance of the error, it would affect
19 the value of the data for that particular year.

20 Q Does it cast serious
21 doubt then on the conclusions reached?

22 A In general one wouldn't
23 any draw/very serious conclusions on baseline data that
24 are only one year -- that have only one year's evidence.

25 Q That then would apply
26 to the entire 1972 report, you can't draw serious
27 conclusions from that report then, I take it.

28 A What entire 1972 report?

29 Q Well, the one we just
30 referred to, we made reference to it.

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McCart, Jakimchuk
Cross-Exam by Veale

1 The 1972 disturbance.

2 A The one on the disturbance
3 of the moulting sea ducks, you have to take it in the
4 context as explained. If you had six years of data
5 you could give it more value than only one year's
6 data. But I don't see any major error in this
7 context.

8 Q Well, to get to a specific
9 point, talk about the Old Crow Flats. You, I understand,
10 did you personally go in and do a count in the flats,
11 or one of your assistants or employees?

12 A What we did was to do an
13 aerial survey of waterfowl.
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Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Veale

1 Q Could you tell me the
2 results of that aerial survey?

3 A We have recorded it.
4 It is in the Biological Report Series. It gives us
5 an idea of the species present and the density of
6 those species in terms of aerial transects that
7 were flown over the Old Crow Flats.

8 Q Are those figures
9 readily available?

10 A Yes, I think that I
11 can find them.

12 MR. MARSHALL: Mr. Commissioner,
13 can't Mr. Veale read the report? We have given him
14 a set of these reports and if it is a matter of just
15 looking at it and getting a figure, can we do that?

16 THE COMMISSIONER: Well,
17 Dr. Gunn seems to be getting it, let's do it this
18 way for now and --

19 MR. VEALE: Which volume are
20 we in?

21 A In Volume X, Mr.
22 Veale, Table 2 shows the results of aerial transect
23 surveys of the Old Crow Flats, I am looking at the
24 index, it says page 17.

25 Q Do you have total
26 counts indicated there?

27 A Yes, we have.

28 Q You do have total
29 counts?

30 A Yes, we do.

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Cross-Exam by Veale

Q What are those figures?

A In June we counted 1,797 waterfowl and 146 birds that were not waterfowl for a total of 1,943. In July we counted 7,706 waterfowl plus 902 that were not for a total of 8,608. In August we counted 10,395 waterfowl, plus 714 that were not for a total of 11,109. In September we counted 6,173 waterfowl, plus 81 that were not for a total of 6,254.

Q Dr. Gunn, perhaps we can cut this short and I will give you some figures that I have been made aware of. Volume I of the Northwest Project Study Report had a total count in 1971 of a maximum 120,000 waterfowl, that was in the fall. They had a variation spread of 56,000 to 162, 000 --

A Well, let's define what we mean by total count. I am giving a total count that we obtained on our transect surveys. I am not giving a total count of all the birds in the Old Crow Flats.

Q I see. So what do you do then on a transect survey? How do you calculate a total count? Do you take one at all?

A We can from that give you an estimate of the number of birds per square mile along the route that we followed, and we have that for you.

Q Well, perhaps then, let's take a spring month then and give me your total count.

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1 A Well, we don't have a
2 spring month --

3 Q Take a fall month?

4 A -- we have June, July ,
5 August and September.

6 Q Okay, let's take
7 September.

8 A All right. Our
9 September figures gave in terms of waterfowl per
10 square mile, 59.6.

11 Q I guess we are dealing
12 in different figures here. I am trying to have you
13 give me a figure for Old Crow Flats, and you can't
14 do that, I gather?

15 A Well, what we would
16 have to do would be to take a geographical figure for
17 the Old Crow Flats area and then multiply it by
18 59.6, that is if we had it in terms of square miles.
19 I don't have the figure here for the working area of
20 the Old Crow Flats.

21 Q Okay, I won't pursue that
22 line of questioning.

23 Would it be fair to say that
24 your overall conclusion with respect to strictly
25 bird problems would be that the farther away from the
26 North Slope, the better?

27 A I don't think that that
28 is a reasonable question. There are obviously diminish-
29 ing returns, and I think it would level out before
30 you got very far. You might get into completely new

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1 areas. The --

2 Q Well -- sorry --

3 A Go ahead.

4 Q Okay. What I am
5 suggesting to you -- I will put this question to you
6 If we look at the Fairbanks corridor. Are you aware
7 of any major migration, nesting, or flight paths
8 along that route, and my second question which I will
9 give to you now would be, would you prefer that
10 route to the prime route?

11 A Let me take the
12 second question first. We did a literature study
13 of a Fairbanks corridor and obtained from that as
14 much information as we could about what was known
15 about the birds along the Fairbanks corridor. This is
16 not, by any means, as intense a study as we did on
17 the prime route or the alternate route. This is a
18 corridor study, not a route study, and on that basis
19 we felt that the chief disadvantage of the corridor
20 route was its length, but it had advantages in that
21 it missed what I consider the areas that are of
22 great importance to waterfowl and other birds in the
23 northwestern part of Arctic North America.

24 To be more specific, the
25 areas that I think are of great importance are the
26 Mackenzie Delta, the Beaufort Sea Coast, the Old
27 Crow Flats, the Yukon Flats, the Yukon Delta --

28 THE COMMISSIONER: Excuse me,
29 what was the last one?

30 A The Yukon Delta, sir.

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1 THE COMMISSIONER: Oh, of the
2 Yukon River.

3 A Yes, that is way out on
4 the Alaska coast, yes.

5 These are all areas of
6 great significance to waterfowl. The Fairbanks
7 route does cross areas that are of importance, but
8 of secondary importance compared to those and since
9 it avoids all those, it has its attractions to us, but
10 there are problems with raptors, but these are
11 probably no greater than they are on the Prime Route.
12 There are problems getting off the North Slope, but
13 it takes the shortest way out by going directly
14 south, so that on balance we look favourably at that
15 corridor, but we have not examined it as a route.

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Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Veale

1 Q You have submitted or
2 your counsel has submitted written recommendations.
3 Are they the sum total of your recommendations to
4 date?

5 A No, they represented the
6 position we had on our recommendations about last
7 March or so. We have made some modifications since
8 then to that.

9 Q So those recommendations
10 are now in the process of modification, eh?

11 A Yes, we tend to modify
12 our recommendations as we go along, on the basis of
13 information that we obtain.

14 Q Well, is there any parti-
15 cular deadline you're shooting for? In other words, can
16 we have the benefit of those modifications at this
17 Inquiry?

18 A They will arise chiefly
19 out of the work that we have done in the summer of
20 1975, and these reports will be available in due
21 course.

22 Q You can't say whether or
23 not this Inquiry will have the benefit or not?

24 A Oh, I expect it will,
25 yes.

26 Q I see, by the time we
27 get to the recommendation stage then they will be
28 available?

29 A Yes.

30 Q Mr. Hemstock, with

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1 respect to the recommendations to date and the modifica-
2 tions that you are aware of, do you have any reservations
3 with respect to any of those recommendations with the
4 exception, of course, of the discussion you've had
5 with Mr. Bayly relating to ~~those~~ compressor stations
6 and so on?

7 WITNESS HEMSTOCK: No, I don't
8 think I have any reservations with regard to the re-
9 commendations here.

10 WITNESS GUNN: Mr. Veale,
11 there's one modification I can tell you, that is that in
12 those recommendations I believe we've recommended a
13 height of 2,500 feet as a minimum overflight.

14 Q That is an increase of
15 500 feet, is that, is my understanding correct?

16 A No, that's our original
17 recommendation, 2,500 feet. Now subsequent to our
18 experimental work during this year, with gyr falcons,
19 it seemed to be appropriate to bring that down to
20 2,000 feet. There seemed to be no evident disturbance
21 to gyr falcons at the nest at 2,000 feet. The other
22 birds that are particularly sensitive to aircraft, of
23 course, are geese, and they are going to be disturbed
24 whether we are at 2,000 feet or 2,500 feet. So it
25 seemed^a/logical procedure to make that minimum altitude
26 2,000 feet above ground level rather than 2,500.

27 Q If you were dealing with
28 geese alone, would you make it much higher than that,
29 is that what you're saying?

30 A No, I wouldn't because I

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1 don't think you can fly high enough in any practical
2 way to avoid the impact, I think there you have to
3 use spacing rather than altitude.

4 Q Frequency of flight?

5 A Yes.

6 MR. VEALE: Well, Mr.

7 Commissioner, those are my questions.

8 THE COMMISSIONER: Thank you,
9 Mr. Veale.

10 Well, it's five o'clock so
11 we'll adjourn until 9:30 tomorrow.

12 MR. MARSHALL: Mr. Commissioner,
13 can I raise a couple of little matters?

14 THE COMMISSIONER: Yes.

15 MR. MARSHALL: I've been
16 checking with counsel and all counsel seem to stretch
17 things a little bit or press them, I guess, when they're
18 making estimates as to the length of their cross-
19 examination. It seems clear to me that we have at
20 least two full days cross-examination left for this
21 panel. There is some suggestion that perhaps we could
22 sit possibly Friday night and Saturday, in an effort
23 to try to clear up the panel this week. I don't think
24 I would favor that, sir. It's been a pretty full week,
25 and it seems to me that given the pattern we've seen
26 developing, there's no assurance that we would finish
27 with the panel Saturday, and they'd be back next week
28 anyway. I'm certainly prepared to re-assess it tomorrow
29 to see how much further we've gone.

30 THE COMMISSIONER: Excuse me.

1 Well, you re-assess it tomorrow and I don't know
2 about sitting Friday night, that's pretty hard on
3 the Court reporters, but if it looks like we could
4 clean it up Saturday, we'll be guided by you, Mr.
5 Marshall, and Mr. Hollingworth, and of course the panel.
6 It's really your convenience that we'd be most anxious
7 to suit, and if these gentlemen can get away and not
8 return next week, that might please them, you never
9 know.

10 MR. SCOTT: Mr. Commissioner,
11 I suggested Saturday to Mr. Marshall and Mr. Waddell
12 has just told me that under the new arrangements negotia-
13 ted with the Court reporters that is frankly impossible,
14 the Court reporter's taking this part down, I notice.

15 (LAUGHTER)

16 If we come to that it may be that inducements can be
17 offered that will pacify them, but I think we have that
18 contractual dilemma.

19 THE COMMISSIONER: I'll leave
20 that to Mr. Waddell and you.

21 MR. SCOTT: That's what I was
22 afraid of.

23 MR. VEALE: Mr. Commissioner,
24 there's one point that I neglected to deal with with
25 Mr. Jakimchuk, and perhaps it would be appropriate
26 to at least raise the point now. He's not able to
27 deal with it, but you recall in Old Crow, Peter Lord,
28 gave a lengthy statement relating to harassment of
29 the caribou by Renewable Resources, and I was -- that
30 was referred at the time to Commission counsel to take

1 up, and make sure that there was complete and full
2 cross-examination at the formal hearings on it, and
3 I would like now to have Mr. Scott's undertaking that
4 he will do that. I can give the reference in order that
5 Mr. Jakimchuk can read -- I'm sure he's read it in
6 any event -- but --

7 THE COMMISSIONER: I remember
8 that evidence. It wasn't -- I mean it was very
9 important evidence but in some respects it was a
10 little difficult to follow, that is the movement of
11 the caribou and so forth.

12 MR. SCOTT: Mr. Commissioner,
13 I wasn't at Whitehorse when that was raised, and it
14 wasn't brought to my attention but --

15 MR. VEALE: It was in Old
16 Crow, Mr. Scott.

17 MR. SCOTT: Whoever it was, I
18 wasn't there but if Mr. Veale will show me the trans-
19 cript I will look into it. I am considering a complaint
20 against Dr. Gunn as well for flushing those birds off
21 the nest last year, but I'll deal with that later.
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1 MR. MARSHALL: Sir, there is
2 one other --

3 THE COMMISSIONER: Yes.

4 MR. MARSHALL: A couple of
5 other little things. I think counsel are pretty well
6 finished with questions to Dr. McCart and if they could
7 finish him off as it were tomorrow, he would be
8 appreciative of that and so would we because he has to
9 get back to work writing his Cross-delta Report and
10 finally, sir, we have got some evidence from Mr. Anthony.

11 He intends to call as I
12 understand it, some 16 witnesses or something. We have
13 evidence from two of them. We do not have the rest yet.
14 Nor do I have the reports that were set out in the list
15 that CARC submitted some three weeks ago. I have been
16 endeavouring to get them and I have even suggested to
17 Mr. Anthony all he needs do is phone the Arctic Gas
18 office in Ottawa and we will pick them up and we will
19 ship them up here at our expense.

20 They are not here yet, sir,
21 and my witnesses on this panel are anxious to have a
22 look at them so that they can have the benefit of those
23 studies and obviously some of the cross-examination may
24 relate to those very studies.

25 I just raise it because
26 it seems to me it puts us at a bit of a disadvantage
27 not being able to have our have that information available
28 to us.

29 MR. HOLLINGWORTH: I was under
30 the impression from Mr. Anthony that those reports were

1 to be here on Tuesday.. I have not heard anything more
2 about it.

3 THE COMMISSIONER: Well, all
4 these nagging does not do much good because Mr. Anthony
5 is not here. I think that -- is there anybody here from
6 the Canadian Arctic Resources Committee? Mr. Bayly
7 is kind of the unofficial representative but he is not
8 even here.

9 MR. SCOTT: Was that a pun,
10 "nagging"?

11 THE COMMISSIONER: I am just
12 wondering if -- I am sure that Mr. Anthony is doing his
13 best. Maybe Mr. Bayly and Mr. Bell and Mr. Veale who
14 I think have some kind of informal alliance with CARC
15 might pass all of this on to him and to Mr. Anthony and --

16 MR. SCOTT: Mr. Commissioner,
17 I promised Mr. Anthony that I would phone him on Friday
18 to let him know what had happened this week and I will
19 phone him tomorrow morning. Perhaps Mr. Marshall could
20 write down what he wants because my mind is --

21 MR. MARSHALL: I want all of
22 the reports on the evidence that was that was given
23 three weeks ago.

24 MR. SCOTT: I will communicate
25 that to Mr. Anthony myself.

26 THE COMMISSIONER: Yes and really
27 I think you should press him. We know he is busy and
28 doing his level best but the only remedy I can give Mr.
29 Marshall if he does not get these things on time is an
30 adjournment and Mr. Marshall does not want that and I
do not want it.

1 MR. SCOTT: Maybe Mr. Anthony
2 wants it.

3 THE COMMISSIONER: Well, don't
4 put that idea into his head.

5 Well, we will adjourn
6 until 9:30.

7 (PROCEEDINGS ADJOURNED TO DECEMBER 5, 1975)
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Mackenzie Valley Pipeline
Inquiry
4 Dec.'75 Vol.96

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MACKENZIE VALLEY PIPELINE INQUIRY

Publication

IN THE MATTER OF APPLICATIONS BY EACH OF

(a) CANADIAN ARCTIC GAS PIPELINE LIMITED FOR A
RIGHT-OF-WAY THAT MIGHT BE GRANTED ACROSS
CROWN LANDS WITHIN THE YUKON TERRITORY AND
THE NORTHWEST TERRITORIES, and

(b) FOOTHILLS PIPE LINES LTD. FOR A RIGHT-OF-WAY
THAT MIGHT BE GRANTED ACROSS CROWN LANDS
WITHIN THE NORTHWEST TERRITORIES,

FOR THE PURPOSE OF A PROPOSED MACKENZIE VALLEY PIPELINE

and

IN THE MATTER OF THE SOCIAL, ENVIRONMENTAL AND
ECONOMIC IMPACT REGIONALLY OF THE CONSTRUCTION,
OPERATION AND SUBSEQUENT ABANDONMENT OF THE ABOVE
PROPOSED PIPELINE

(Before the Honourable Mr. Justice Berger, Commissioner)

Yellowknife, N.W.T.

December 5, 1975.

PROCEEDINGS AT INQUIRY

Volume 97

CANADIAN ARCTIC
GAS STUDY LTD.

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Mr. Alick Ryder and
Mr. Ian Roland for Mackenzie Valley Pipeline
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Mr. Pierre Genest, Q.C.,
Mr. Jack Marshall, and
Mr. Darryl Carter for Canadian Arctic Gas
Pipeline Limited;
Mr. Reginald Gibbs, Q.C.,
Mr. Alan Hollingworth &
Mr. John W. Lutes, for Foothills Pipe Lines Ltd.;

Mr. Russell Anthony &
Pro. Alastair Lucas for Canadian Arctic Resources
Committee;

Mr. Glen W. Bell and
Mr. Gerry Sutton, for Northwest Territories
Indian Brotherhood, and
Metis Association of the
Northwest Territories;

Mr. John Bayly
or
Miss Leslie Lane for Inuit Tapirisat of Canada,
and The Committee for
Original Peoples Entitle-
ment;

Mr. Ron Veale and
Mr. Allen Lueck for The Council for the Yukon
Indians;

Mr. Carson H. Templeton, for Environment Protection
Board;

Mr. David Reesor for Northwest Territories
Association of Municipal-
ities;

Mr. Murray Sigler for Northwest Territories
Chamber of Commerce.

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WITNESSES FOR CANADIAN ARCTIC GAS PIPELINE LIMITED:

Alexander William Francis BANFIELD

William W.H. GUNN

Russell Alexander HEMSTOCK

Peter J. McCART

Ronald Daniel JAKIMCHUK

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Banfield, Gunn, Hemstock
McCart, Jakimchuk
In Chief
Yellowknife, N.W.T.

December 5, 1975.

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

MR. MARSHALL: I see Commission counsel is here, sir.

ALEXANDER WILLIAM F. BANFIELD,
WILLIAM W.H. GUNN,
RUSSELL ALEXANDER HEMSTOCK,
PETER J. MCCART,
RONALD DANIEL JAKIMCHUK, resumed

DIRECT EXAMINATION BY MR. MARSHALL (CONTINUED):

Q Dr. Banfield is able to respond to one of Mr. Veale's questions about the decline of the 40-mile caribou herd, and we could deal with that now, sir.

THE COMMISSIONER: All right.

WITNESS BANFIELD: Yes, yesterday Mr. Veale asked me questions about the possible causes for the decline in the 40-mile caribou herd which is adjacent to the southern corner of the range of the Porcupine caribou herd, and I gave him some comments by recollection, and told him that in the meantime I could verify this information, and I have now done so. The original information on the distribution numbers of the 40-mile caribou herd were prepared by Ronald Skoog, S-K-O-O-G, in 1956, and the information has been repeated in a Wildlife Technical Bulletin No. 1 written by James E. Hemming entitled:

"The Distribution Movement Patterns of Caribou in Alaska,"

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1 published by the Alaska Department of Fish & Game,
2 1971, and the information I gave up to 1971 was
3 essentially correct, that in the late '50's and
4 early '60's the herd migrated westward as far as the
5 White Mountains in the north of Fairbanks, and crossed
6 the Steese Highway from Fairbanks to Circle, and during
7 this time they were subject to heavy hunting pressure
8 from Fairbanks residents.

9 After about 1965 and into the
10 '70's they withdrew eastward and now lie, occupy an
11 area much closer to the Yukon boundary.

12 The current studies have been
13 undertaken by J.A. Curatolo, C-U-R-A-T-O-L-O, who has
14 been working for the last two years and his thesis was
15 just presented this spring, 1975, as part of the
16 Co-Operative Wildlife Research Unit at the University
17 of Alaska. His recent studies have indicated that
18 this herd has had very poor calving success in the
19 last couple of springs because of unfortunate weather
20 conditions at calving, they've had rain and sleet and
21 snow just at the time the calves were dropped. There
22 also seems to be heavy wolf predation and it is the
23 conclusion now that these two factors are responsible
24 for the current continuing decline of the herd, and I've
25 been informed the present population is estimated no
26 more than 5,000 animals.

27 Mr. Veale also asked about
28 regular surveys of caribou herds, and U.S. Fish & Wild-
29 life's, Alaska Fish & Wildlife Department, Fish & Game,
30 I'll get this straight, Alaska Department of Fish & Game,

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1
2 has developed a policy of regular aerial surveys of
3 the major caribou herds in Alaska. This was initiated
4 in 1970 when they surveyed the Arctic coast, and in
5 1973 they surveyed the Porcupine caribou herd, and their
6 plan is to re-survey every five years. So in 1975 they
7 re-surveyed the Western Arctic herd, and they propose
8 to return to the Porcupine caribou herd and re-survey
9 it and get a count in 1977.

10 Mr. Veale also asked some
11 questions about the relationship between Carcross
12 caribou and the 40-mile herd, and he took me a bit by
13 surprise when he asked me if I had studied the herd
14 in 1930, and of course I hadn't; but I did study the
15 Carcross caribou in 1957 to 1961, at least that was a
16 period when I searched for specimens of the caribou
17 from Southern Yukon and I found only a handful of
18 Southern Yukon specimens, that is from the area south
19 of Whitehorse and the Alaska Highway, and I found these
20 in museums in Ottawa, New York, and London, England .
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1 After undertaking a study
2 of these specimens it was my conclusion that the
3 caribou from the southern Yukon were mountain or
4 woodland caribou, not migratory, barren ground
5 caribou as the Porcupine caribou herd are and
6 also the 40-Mile herd and I notice that again in this
7 review of the 40-Mile herd by James Hemming he
8 also states that historically the 40-Mile herd
9 migrated as far as Whitehorse but no further. I
10 think it is generally believed now that the caribou
11 found in the St. Elias Range and in Southern
12 Yukon as well as in Eastern Yukon are woodland or
13 mountain caribou, thank you.

14 Q Also yesterday Mr.
15 Veale raised a matter that apparently came up in
16 Old Crow as to some allegation that Renewable
17 Resources had harrassed some wildlife. Mr. Jakimchuk
18 wishes to respond to that, sir.

19 WITNESS JAKIMCHUK: Mr.
20 Commissioner, as you can imagine that type of a
21 statement is very distressing to me and it caused me
22 a great deal of concern particularly since articles
23 have been written in the Whitehorse Star and even
24 the Fairbanks Daily News Miner, which are extremely
25 damaging to the reputation of my company. I cannot
26 categorically deal with all of Mr. Lord's testimony,
27 however, because it is quite confusing to me. He
28 makes reference to movements and concentrations which
29 appear to have occurred over a number of years. As
30 soon as I became aware of his testimony in Old Crow

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1 I immediately checked with all of my field staff
2 and as far as we were able to ascertain, the only
3 time Mr. Lord accompanied us in an aircraft was in
4 May of 1971. I would like to say that in the course
5 of surveys, disturbance of animals, no matter who
6 does them is an inevitable consequence. Harassment
7 deliberately is another matter, and that is what
8 concerns me and casts aspersions on our integrity.
9 I would also like to point out a couple of other
10 things. There are some discrepancies there, for
11 example the -- it appears if Mr. Lord at one point
12 is referring to 1973, at which time he was never in
13 an aircraft with us. As I say, I find it extremely
14 difficult without further clarification, to know
15 precisely who he is talking about, because I should
16 say that we were in Old Crow and have been in Old
17 Crow for a number of years and it is a friendly
18 community to us. There were others there as well
19 conducting surveys, other parties, governmental
20 parties and researchers from the Environment Protec-
21 tion Board. So I am in the position of feeling
22 quite defenseless at this point to deal with something
23 that casts a great cloud, as far as I am concerned
24 over my company, not knowing in fact if we are
25 responsible, and with that I would just like to
26 make that statement that I feel extremely vulnerable
27 that this has become a topic in the press and so
28 on. It is most regrettable to me. I can say no
29 more in defense than I don't think that we were
30 responsible for what Mr. Lord is describing, but I have

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1 no way of proving that conclusively to you.

2 THE COMMISSIONER: Thank you
3 Mr. Jakimchuk.

4 MR. MARSHALL: Finally, sir,
5 Dr. Fyles reminded me, in fact he has reminded me a
6 couple of times that I hadn't responded to a
7 request that Commission Counsel made for some informa-
8 tion on aircrafts, a number of STOL aircraft flights
9 to move men for typical construction spread. I have
10 some information on that which I would like to read
11 into the record.

12 For construction spreads
13 requiring STOL aircraft servicing, at least one
14 such aircraft will be assigned to each spread.
15 Additional short term charter aircraft will be
16 required at peak periods. An average of four trips
17 per day will be required to each camp requiring
18 such STOL service. Due to probable adverse weather
19 conditions this number would no doubt double
20 on many occasions. If STOL aircraft with capacities
21 larger than Twin Otter become available prior to
22 construction, the number of trips would be reduced
23 accordingly.

24 Thank you, sir, that is
25 all I had.

26 MR. HOLLINGWORTH: Mr.
27 Commissioner, the other day --

28 MR. SCOTT: If I could
29 just interrupt Mr. Hollingworth to deal with that
30 answer. Dr. Fyles points out that the original

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1 request dealt with helicopters as well, and I presume
2 that that information will be forthcoming when it
3 is available.

4 MR. MARSHALL: I didn't
5 see that in the transcript. Perhaps it was someplace
6 else and we missed it. I will attempt to see if
7 that information can be provided, Mr. Scott.

8 THE COMMISSIONER: Mr. Scott,
9 do you intend to pursue this matter that Mr. Lord
10 raised at Old Crow, that Mr. Jakimchuk has just
11 now responded to?

12 MR. SCOTT: Do I intend
13 to pursue it?

14 THE COMMISSIONER: Yes.

15 MR. SCOTT: I don't intend
16 to pursue it, Mr. Commissioner. I frankly don't know
17 what can be done about it. I don't think that the
18 Commission has any right to deal with it and I
19 don't think that it is possible at this date to
20 make any, realistically make any determination
21 as to what happened.

22 THE COMMISSIONER: Oh, I
23 don't intend to.

24 Well, at any rate, Mr.
25 Jakimchuk, I certainly appreciate the fact that you
26 have gone to the trouble of trying to ascertain whether
27 any of your people were in any way responsible for
28 such harassment, if it did occur in a deliberate
29 way, and I will certainly accept your assurance that
30 insofar as you know, no one connected with your
organization was involved. I think that we can leave
that particular incident now.

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1 THE COMMISSIONER: So where are
2 we then this morning?

3 MR. HOLLINGWORTH: I just have
4 one brief item to bring up, Mr. Commissioner. The
5 other day Mr. Veale raised the issue of the Fairbanks
6 corridor. I am expecting to be forwarded a copy of
7 the draft report of the Federal Power Commission/^{staff}both
8 to our Calgary and Ottawa offices, and will secure a
9 copy as quickly as I can and bring it to you; but I
10 might read excerpts from a telex report that we have
11 from our counsel in Washington.

12 THE COMMISSIONER: Excuse me.
13 This is a report from your counsel in Washington, and
14 what is it?

15 MR. HOLLINGWORTH: It would
16 just be a brief summary of what was said by the F.P.C.
17 staff.

18 THE COMMISSIONER: All right,
19 just go ahead.

20 MR. HOLLINGWORTH: It says:
21 "The staff of the Federal Power Commission has
22 issued a 3-volume draft environmental impact
23 statement. Parts of the Department of the
24 Interior Impact Statement issued in July, 1975
25 have been adopted by reference. The staff
26 explicitly states that it will not make a
27 conclusion as to which project is environmen-
28 tally preferable until such time as the comments
29 have been received, and these are due January
30 16th of '76, and a final statement has been

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1 prepared. They do make recommendations, however,
2 based upon either project being approved. Most
3 importantly, the staff has concluded that if
4 Arctic Gas receives a certificate, they should
5 construct the Fairbanks alternative specifically,"
6 and this appears to be a quote, sir.

7 "The Alaskan Arctic route of the Arctic Gas
8 system should be constructed along the proposed
9 Fairbanks corridor alternate route. This right-
10 of-way would involve construction of approximately
11 735 miles of pipeline in Alaska, the first 460
12 miles would extend south from Prudhoe Bay adjacent
13 to the Alyeska Oil Pipeline right-of-way to just
14 north-east of Fairbanks. From that point the
15 route would proceed south-easterly along the
16 Alaskan Highway for 275 miles to the Canadian
17 border. Notably absent from this description is
18 any reference to a delta lateral."

19 That, I presume to be editorial comment . That's all
20 I can help you with at this time, sir.

21 MR. MARSHALL: I appreciate
22 that the matter of the F.P.C. proceeding is of some
23 interest to the Inquiry, but I suggest that there is a more
24 appropriate way to do it than for Mr. Hollingworth to
25 quote from a telex sent from his Washington counsel to
26 Foothills --

27 THE COMMISSIONER: Well, that's
28 the best you can do at this stage.

29 MR. MARSHALL: Well, Mr.
30 Hemstock has the F.P.C. reports.

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1 MR. SCOTT: I am fascinated by the way in which
2 both Mr. Marshall and Mr. Hollingworth in turn bring
3 us the good news as they see it from time to time.

4 THE COMMISSIONER: Well, Mr.
5 Hemstock has ostentaciously opened up some document
6 and I'm overcome with curiosity. Can somebody tell
7 me what's going on?

8 MR. MARSHALL: Well sir, the
9 report is here, and it can be examined if Commission
10 counsel is interested in it or if you are, sir. It's
11 not necessary to --

12 MR. HOLLINGWORTH: I wasn't
13 told that, Mr. Marshall.

14 MR. MARSHALL: Well, it was in
15 the office when you stopped in yesterday sitting on
16 the table.

17 THE COMMISSIONER: All right,
18 let's get on with it.

19 MR. SCOTT: That's the
20 report of the F.P.C. staff. I suppose I may be filing
21 the report of Dr. Fyles of my staff in due course.

22 THE COMMISSIONER: Yes. Well,
23 at any rate I think that this report is one that we
24 should examine, not with a view to getting emeshed in
25 some argument about whether it's a sound report or not,
26 but with a view to determining whether there is any
27 justification in this Inquiry taking a longer look at
28 the Fairbanks alternate route. That's all, and I'd like
29 to see that later on, if I could, subject to any
30 objections counsel may have, because if that thing is

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McCart, Jakimchuk
Cross-Exam by Bell

1 sort of floating out there, Mr. Marshall, we should
2 --

3 MR. MARSHALL: I understand
4 it's been widely distributed by the Federal Power
5 Commission, sir. I think we have a clear copy of it
6 we could provide to you. It's a draft report, as I
7 understand it.

8 THE COMMISSIONER: Yes.

9 MR. MARSHALL: Being circula-
10 ted for comments.

11 THE COMMISSIONER: O.K. Mr.
12 Bell? Mr. Scott?

13

14 CROSS-EXAMINATION BY MR. BELL:

15 Q Mr. Jakimchuk, I'd like
16 to turn our attention to a species slightly less trendy
17 than caribou, but nevertheless an important one. I'm
18 talking about moose and I take it that there are
19 many low-lying islands in the Mackenzie River where
20 moose come down to over-winter.

21 WITNESS JAKIMCHUK: That's
22 correct.

23 Q They move down from the
24 east side of the Mackenzie River in December, spend the
25 winter on the islands, then move back up in March and
26 April to their summer range.

27 A There's a possibility
28 that they're moving down from both sides of the Macken-
29 zie, and not just the east side. But what you have
30 described is generally correct.

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McCart, Jakimchuk
Cross-Exam by Bell

1 Q The possibility is
2 greater, though, that they're moving down from the east
3 side, isn't that the case?

4 A Well, that would have
5 been postulated.

6 Q And while they're over-
7 wintering there, they're being hunted by local
8 residents along the river.

9 A Correct.

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McCart, Jakimchuk
Cross-Exam by Bell

1 Q Do we know anything about
2 the level of the population ? Is it fairly high?

3 A We conducted a survey,
4 I believe it was in 1972, and the islands of the
5 Mackenzie from approximately Wrigley to Fort Good
6 Hope are the important wintering areas. During the
7 course of that survey we believe counted 107 moose in
8 total on that particular time. Populations generally
9 in the Mackenzie Valley per unit area are not nearly
10 as high as they are in southern areas, but the density
11 of moose in winter on the islands is definitely much
12 higher than one normally finds during a summer distri-
13 bution. We try to keep as current as we can and for
14 example have a personal communication from the Canadian
15 Wildlife Service of a survey they did in 1974 last
16 March, and we have some current data there that, for
17 example, show 40 moose in the Oscar Creek Valley.

18 Q It seems to me that there
19 may be some potential inter-action between the pipeline
20 activities and moose migration to and from these
21 over-wintering areas, in view of the fact that construc-
22 tion begins in November and generally continues through
23 to March and April, and that the route of the pipeline
24 crosses at right angles most of the migration routes
25 that are used by the moose that come down to winter
26 on these islands. Is that a fair statement?

27 A Well, they're not migra-
28 tion routes. Moose do not migrate as such.

29 Q They move along --

30 A They move along, and they

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McCart, Jakimchuk
Cross-Exam by Bell

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move along generally the creeks, the tributaries to the Mackenzie River, the valleys of these creeks. So there is a potential inter-action there, yes.

Q It's actually, it seems to me, to be a potentially serious inter-action because you have all manner of construction activities going on in December. You have heavy vehicular traffic back and forth along the right-of-way, and if moose are moving down to the islands in the Mackenzie, they may well be deterred from reaching their over-wintering areas by the construction activity.

A There is a possibility that there will be an inter-action there, yes, and as a matter of fact, we do have a gap in knowledge inasmuch as we do not know precisely when these movements occur of the moose, the seasonal movements. We would like to study this further.

Q Well, isn't it pretty clear that they don't move before November, and they probably move in November and December?

A That appears to be the case.

Q And from reading the construction schedule the applicant filed, it's their policy to begin construction in November. They start with grading and clearing the right-of-way.

A That is correct.

Q And it continues on and it gets to ever more increasing levels through the winter

Banfield, Gunn, Hemstock
McCart, Jakimchuk
CrossExam by Bell

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A Well, there will be --

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Q Well, the point I want

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to make with you is, can you suggest to us or have you recommended any mitigative measures to avoid the possible inter-action here?

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A We have not had specific enough data on these movements to be site specific on mitigative measures. Our recommendation would be similar to that with caribou, that no deliberate harassment take place, that moose be allowed to move if they cross the right-of-way, if there was activity there, slow down of machinery and so on. However, in terms of the numbers of animals involved we do not feel that there will be a solid barrier to moose. We do not feel that the problem is of as great a magnitude as it may be for other species. Moose in southern parts of Canada are associated with many types of developments -- highways, seismic lines, vehicular traffic in National Parks, in Provincial Parks such as in Quebec -- have demonstrated a capability to move where there is a source of disturbance and we do not feel there will be an impenetrable barrier there for the movement of moose.

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Q You mentioned Oscar

Creek. Perhaps we could just look at that as an example. Oscar Creek, Mr. Commissioner, is a few miles north of Norman Wells and runs from the -- through a pass in the Norman Range of the Franklin Mountains and on the south side of Oscar Creek, the pipeline right-of-way

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Bell

1 crosses the creek about two miles up from the river,
2 is that approximately right?

3 A I haven't calculated the
4 exact distance. That sounds fairly reasonable.

5 Q And on the south side of
6 the creek there is planned a compressor station, No.
7 MO-8. There's a construction camp that will be used
8 during two winter seasons. There is the usual facilities
9 that go with that, a stockpile, communications tower,
10 a helipad, a borrow pit. There is also going to be
11 a permanent access road on the south side of the creek
12 from the camp to the wharf on the Mackenzie River
13 and there's also going to be a temporary road from
14 the borrow pit across the creek to the right-of-way
15 on the north side of the creek. As I said, there's
16 going to be activity here for two winter seasons.
17 Now, I'd like to know a little bit more about your
18 belief that the impact here can be mitigated. Do you
19 know, have the engineers told you approximately how
20 many vehicle passes per day or per hour will be made
21 along that route in any given period?

22 A I do not have that
23 information.

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1 May I add also that
2 a long time ago we identified that Oscar Creek
3 area as being a sensitive area and one in which
4 these activities were proposed and we have been
5 concerned about it. I have had one of my staff
6 involved in this past summer in a survey of all
7 proposed areas of this nature, borrow sites and
8 so on, such as would take place there, and he has
9 given particular attention to the Oscar Creek area
10 and will be preparing a report, a detailed report
11 on specific recommendations to make with
12 regard to the placement of some of these
13 facilities and so on. I don't have that available
14 to me but he is devoted an inspection of that
15 specific area with that in mind.

16 Q And you anticipate
17 that you will be recommending mitigative measures?

18 A I have told him to
19 recommend mitigative measures.

20 Q Because I was just
21 wondering how you could really say that slowing down
22 the machinery would be an appropriate measure, if you
23 didn't know the number of vehicle passes that were
24 being made across the creek, if you didn't know the
25 number of moose that were coming down or when they
26 were coming, but as you say, this report will cover
27 all of these things?

28 A Well, he has made an
29 inspection of the area. We are concerned primarily
30 with the placement of some of the facilities with

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McCart, Jakimchuk
Cross-Exam by Bell

1 respect to where the moose wintering habitat is. We
2 are more concerned with removal of habitat, I believe,
3 than we are in blocking moose movements. Moose are
4 much taller, for example, than either caribou or
5 deer. They can occupy conditions of deeper snow. They
6 are extremely capable animals in terms of overcoming
7 obstacles such as windfalls and the like, where even
8 men cannot sometimes walk. We know from general
9 experience as biologists, that moose are in close
10 association with human developments in southern
11 Canada, so that my concern for moose then becomes
12 more than a habitat oriented concern, rather than
13 one related to their movement capability.

14 THE COMMISSIONER: And
15 they are found as individuals -- they are not
16 herding animals --

17 A They do not travel
18 in large herds, no, sir. They --- generally as
19 individuals or in small groups, such as a cow and a
20 calf or perhaps at times a group of bulls, very
21 small numbers at any given time.

22 MR. BELL: I would like
23 to refer to a report of the Environmental Social
24 Program of 1973 entitled: "An Inventory of Wildlife
25 Habitat of the Mackenzie Valley and the Northern
26 Yukon." It is Report No. 73-27, and at page 36 of
27 that report there is a brief reference that I would
28 like to read to you and get your comments on. There
29 first some comment about the destruction of habitat
30 by pipeline activity, then the report goes on to

1 say:

2 "As to the effects of the other factors
3 involved, odors , sounds, differential
4 snow accumulation winter haul roads,
5 location of gravel sources and location
6 of camp sites, a better knowledge of moose
7 behaviour and distribution is needed. It
8 can be predicted that should any of
9 these factors or their location prove
10 disturbing the local moose population
11 will be reduced."

12 Would you agree with that statement?

13 A No, I would not.

14 Not that if it just
15 proves to be disturbing. There is no direct correlation
16 between disturbance and numbers of animals.

17 THE COMMISSIONER: Who
18 wrote that?

19 MR. BELL:
20 It is written by
21 seven different people, sir. The first name on
22 the list is G.H. Watson.

23 Well, perhaps I could
24 try and make a better defense of Mr. Watson's
25 report, and refer you to another passage in it at
26 page 32 where he says, at least I assume it is Mr.
27 Watson, it might be one of the others.

28 "Disturbances associated with pipeline
29 construction, operation and maintenance
30 activities, such as increased human
activity, the operation of heavy con-

1 struction equipment, blasting and
2 the use of all-terrain vehicles
3 and lowflying aircraft, especially
4 helicopters, could all disrupt normal
5 behaviour patterns, greatly increase
6 physiological stress and force animals
7 from their normal activity areas.

8 Assuming the surrounding
9 area is that capacity, then a reduction in
10 local populations could result."

11 Is that a concern of yours?

12 A On a could basis,
13 yes. That could happen. Whether it will or not is
14 another question. You see, I must make a comment here
15 about moose, you see, and that is, some of the highest
16 density moose populations that occur in North America
17 or in Canada, at least occur in the Swan Hills of
18 Alberta, in an area of intensive oil exploration activity
19 and an area of extremely intensive hunting activity,
20 vehicular activity, helicopters and the like, and
21 yet the populations of moose there per square mile ,
22 are higher than, I believe, any other place in Canada,
23 so that utilizing knowledge such as that, I would
24 say that these things could happen, but whether they
25 will or not is another question. A hypothesis -- or a
26 possibility is being described there, and as a
27 possibility, I could agree with that.

28 WITNESS BANFIELD:: Mr. Bell,
29 I have read the paper and I am familiar with it and
30 the point, I think, is one of straightening out all

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Cross-Exam by Bell

1 the assumptions and Mr. Jakimchuk has mentioned them.
2 When you said that it would cause a local decline
3 in moose, that is a possibility, but I would expect
4 them to move out, and then move out of the area
5 of disturbance and occupy other terrain, and then
6 the next quotation assumed that all other areas
7 were equally occupied, in which case there would
8 be no place for them to move, and that again, is
9 a fair assumption. But the point that Mr. Jakimchuk
10 has made is that the moose population in the Mackenzie
11 Valley is below the carrying capacity of the
12 terrain or habitat, and so there in fact would
13 be area for the moose to move out from the area of
14 disturbance.

15 MR. BELL: Well, that
16 is a concern of mine, too, Dr. Banfield, because if
17 the moose move out then my clients have to go farther
18 to shoot them.

19 A That is true.

20 WITNESS JAKIMUCHUK: It is
21 a difficult one with moose. I once inspected a
22 moose, that was a cow moose and a calf, that was shot
23 in the Swan Hills right in the location of a logging
24 operation where there was a very large -- there were
25 large skidders operating during the day and chain
26 saws, and the cow and her calf were clearly attracted
27 to this area of activity, because as the trees were
28 cut, the smaller trees were cut, the more succulent
29 tips of the birch, in particular, became available
30 on the ground, and these shot animals that I examined,

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1 the cow still had birch from the tips of the tree
2 sticking out of her mouth. You know, this type of
3 thing does happen with moose. In other words, what
4 I am saying is, they are quite resilient.

5 Q Do you think then that
6 it may or may not be necessary, I would like to know
7 what you would be willing to recommend here; do you
8 think that it might be necessary to recommend that the
9 construction season be shortened to accommodate
10 the movement of moose, if it proves that they seem to
11 be -- that their movements are being interrupted?

12 A I would think that
13 one could get around that problem by -- with respect
14 to the movements -- when a problem occurred or if
15 moose were in the vicinity, to control it at that
16 time, the activity of vehicles.

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1 Q I guess we'll have
2 to hear from the engineers on that subject.

3 A As I say, this is a
4 sensitive area to us, and we are pursuing it both
5 with a site specific inspection and will be pursuing
6 it also with the engineers.

7 Q Well I take it then
8 this isn't really an area where you^{can} employ protection
9 by avoidance.

10 A That's correct.

11 Q I'd like to refer to the
12 exhibits to the application, the environmental statement
13 such as 14-DN, and it's under tab 6 entitled:

14 "Protection Measures,"
15 at page 11, and at Section 6.3.7 entitled:

16 "Mammals" --

17 A Tab?

18 Q Tab 6, page 11, and under
19 "Mammals".

20 A Right.

21 Q You see item No. 4
22 there which reads:

23 "Winter range of moose and Dall sheep have been
24 identified and largely avoided in route location."

25 Would you recommend any amendment to that statement
26 by the applicant?

27 A No, I think that's a fair
28 statement to make, inasmuch as I think that refers to
29 both the coastal route and the Mackenzie Valley, and
30 we have established that the main winter ranges are on

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1 the islands themselves, and --

2 Q But the routes that moose
3 use to move down to winter range are all crossed at
4 right angles by the pipeline route.

5 A Yes, that is correct,
6 but that statement says that the winter range of moose
7 has been identified and largely avoided in route
8 location, so that the route does not go through the
9 winter range. So you're quite correct that there are
10 moose in the vicinity of the route at certain times.

11 Q Do you have any concern
12 for the long-term impact that the pipeline may have
13 on moose populations along the Mackenzie River?

14 A As you may have gathered
15 by now, I feel that moose are quite a resilient species
16 and as a consequence I am not very concerned that they
17 would be impaired in any way, in the Mackenzie Valley.
18 Moose are one species, as you have heard before, I am
19 sure, that respond to edge provided by clearing, and
20 in point of fact the revegetation program and the
21 clearing contributes browse to moose to some degree.
22 I'm not saying it's significant, but it is a contri-
23 bution to their particular habitat preferences.

24 For example, you will find
25 that the best moose areas that occur from time to time
26 in Canada follow fires, forest fires, for this reason.

27 Q Well, I'm thinking mainly
28 of the possibility that the pipeline will provide
29 increased ease of access to human predators. Isn't
30 that -- I don't know, it may not be a concern of yours.

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1 Is it?

2 A I'm not sure how signi-
3 ficant that ease of access would be to moose. I would
4 be most concerned with moose concentrations that occur
5 in late winter and of course the pipeline right-of-way
6 would not necessarily provide any easier access than
7 the Mackenzie River itself in a frozen state. It would
8 provide access into some of the upland areas, that is
9 correct. However, the distribution of moose during the
10 summer is very scattered and wide-spread. I don't
11 consider it to be a problem of great magnitude.
12 However, it is something that game management agencies
13 should check from time to time to see if harvests are
14 excessive, which is their normal job anyway.

15 MR. BELL: Those are all the
16 questions I have, sir.

17 THE COMMISSIONER: Thank you,
18 Mr. Bell.

19
20 CROSS-EXAMINATION BY MR. TEMPLETON:

21 Q Mr. Hemstock, I think
22 on page -- Volume 88-A, page 13363, you stated a number
23 of reasons for doing research, and one of the reasons
24 was to meet the requirements of the various government
25 Acts and stipulations.

26 A I don't
27 have that before me, but O.K.

28 Q I was talking to Mr
29 Hemstock. Sorry, Mr. Jakimchuk. Did I say the
30 wrong name?

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McCart, Jakimchuk
Cross-Exam by Templeton

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A It is your dulcet tones, Mr. Templeton, which I thought you said "Jakimchuk" rather than "Hemstock".

WITNESS HEMSTOCK: I don't recall that, but that's probably correct, yes.

Q Well, I guess one of the reasons, one of the stipulations is the pipeline guidelines. This was one of the reasons for doing the research.

A Yes, when I first became involved I, in reading the guidelines, interpreted them to indicate that there were certain areas, certain work that had to be done in order to meet those guidelines.

Q Well, you have done a tremendous amount of work, and I'm not trying to detract from that; but after conducting all of these studies and speaking from an environmental point of view, is a corridor containing a highway, an oil and a gas line, along the Mackenzie Valley acceptable to you?

A I directed my main attention to the analysis of the impact of the gas pipeline, and as we have indicated, we have no difficulty with, from an environmental standpoint, with the accepting that and the impact that that will have on what is already there. The impact of the highway I consider to be very much greater, and from an environmental standpoint alone I think there may be well some environmental impacts which are, if not unacceptable, are

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1 certainly very severe.

2 The oil pipeline, I believe,
3 can be built with considerably less impact than a high-
4 way, although it may well be more than a gas pipeline.
5 I would want to find more details of the final methods
6 of construction and operation but on the basis of what
7 I know now, I believe an oil pipeline could be built
8 along that same corridor with acceptable environmental
9 impacts.

10 Q As far as the highway is
11 concerned, you have reservations, in other words
12 in spite of all the research you've done, you have not
13 basically accepted a corridor with the highway in it?

14 A Well, I think that all of
15 our consultants in the -- certainly since we've begun
16 working with them and the last two days in particular
17 have emphasized that their major concern, deals or has
18 to do with the impact of people, the access, and that
19 that's where they expect the greatest environmental
20 impact. That, I think, is where our concern lies.

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1 Q Would you add machines
2 to the people?

3 A No, I think that they
4 have indicated by their evidence that machines are
5 not particularly of concern. It is the people, and
6 I believe, however, that there are many mitigative
7 measures which could be taken which could be very
8 well make the presence of the highway an acceptable
9 feature in the corridor.

10 Q Well, do you consider
11 that the Commissioner in making his recommendations
12 to the Minister should include a recommendation in
13 this regard?

14 MR. MARSHALL: As to mitiga-
15 tive measures that should be taken with respect to the
16 highway?

17 MR. TEMPLETON: Pardon me,
18 I didn't hear you.

19 MR. MARSHALL: Ar e you
20 asking Mr. Hemstock whether he thinks the Commissioner
21 ought to make recommendations about mitigative
22 measures to be taken relative to the highway?

23 MR. TEMPLETON: No, I think
24 that the Commissioner is, by virtue of the guidelines
25 required to comment on the corridor, a multi-use
26 corridor, and I am wondering if Mr. Hemstock would
27 suggest that he make comment on a highway.

28 A I am not sure that I
29 can be very helpful there. I am not that well
30 informed on the terms of reference that this Commission

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1 is required to follow. I think that it might be
2 helpful if those things were --

3 THE COMMISSIONER: I think,
4 Mr. Templeton, that that is a matter that you can
5 urge upon me when we reach the stage of final summations
6 without asking Mr. Hemstock to comment upon it.
7 Suppose he said, "Yes, I think this Inquiry should
8 say something about the highway". We have a pretty
9 good idea what these gentlemen would want me to say
10 anyway, and I don't think you were here earlier in
11 the week, but we had a very useful discussion, at my
12 insistence of the impact of the Dempster Highway on
13 the wintering ground of the Porcupine herd, it
14 being my view that it would be impossible to assess
15 the impact of the gas pipeline, whichever route it
16 took across the Yukon, without considering the impact
17 of the completion of the Dempster. So, I think that
18 we are all trying to get our minds round the whole
19 picture as we move along here. These gentlemen
20 have certainly been of great assistance in that
21 regard.

22 Does this help you? Does
23 this move us along, or does it leave us where we
24 were?

25 MR. TEMPLETON:: Well, I
26 believe that each of the participants have a
27 responsibility to suggest the, work towards the
28 terms and conditions which is your assignment and
29 they have done a great deal of study and I can't
30 help but think that perhaps they have formed some

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1 opinions that would be useful in writing terms and
2 conditions and I think I have mentioned this a number
3 of times before, that I would like to see us get at
4 the terms of conditions so that we will know what
5 we are talking about.

6 THE COMMISSIONER: Well,
7 let me just interrupt you. I know that you --
8 sorry, this seems to me important. The task of this
9 Inquiry is twofold. The first thing is to tell the
10 government what the impact of this proposed gas
11 pipeline and all of its ramifications would be upon
12 the north and its people and its economy and its
13 environment. The government would have that
14 report before it along with the report of the National
15 Energy Board regarding the need of southern Canada
16 and the U.S. for energy from the frontier. Weighing
17 it all up they would decide whether they were going
18 to have a pipeline at all.

19 Then they would have to
20 decide, if they wanted a pipeline, whether Foothills
21 would build it or Arctic Gas. They would look
22 at my report comparing the impact of each project.
23 They would look at the report of the National Energy
24 Board, comparing the costs of delivery of each
25 project -- I am vastly oversimplifying the task of
26 the Energy Board, but that is about all I know
27 about it, so I am limiting myself to that. Then they
28 would say, "All right, it will be Arctic Gas or it
29 will be Foothills". Then they would look at the
30 terms and conditions that I had recommended, and

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1 to the extent they decided they ought to, would apply
2 them to the winning project, if you can call it that,
3 so that while I appreciate your conscientiousness
4 about terms and conditions, the whole question of
5 impact generally is a vital part of the task of the
6 Inquiry that shouldn't be overlooked. That is the
7 way I see the government combining the work of this
8 Inquiry with the work of the National Energy Board,
9 so that it contributes to a rational decision making
10 process at the end of the day. Maybe it won't
11 work in that way, but just considering the matter,
12 that is the way I think this is supposed to
13 work

14 MR. TEMPLETON: The problem
15 that I am having with this is the matter of cumulative
16 impact, where you study the gas pipeline, and a
17 great deal of very good work has been done on it,
18 but it is what -- remember Ian McTaggart-Cowan says:
19 Destruction by insignificant increments --

20 THE COMMISSIONER: Right.

21 MR. TEMPLETON: And I
22 was hanging my hat on the fact that the guidelines
23 do contemplate a multi-use corridor and although the
24 gas pipeline is only asked to comment on the
25 second pipeline, or the first pipeline is supposed
26 to comment on the second pipeline, I feel that
27 as people interested in the environment, you
28 cannot overlook the highway.

29 THE COMMISSIONER: I agree,
30 and in determining what I ought to say to the

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1 government about the impact of the gas pipeline, I
2 intend to report on the impact of the gas pipeline
3 in all of its ramifications, including what is
4 likely to come in its wake, and the guidelines con-
5 template an oil pipeline coming in its wake.
6 The Beaufort Delta group has already indicated that
7 it wants to build an oil pipeline.

8 I have told these two
9 companies that I want them to prepare their evidence
10 regarding the impact of an oil pipeline. Mr. Hemstock
11 has just assured us that he is satisfied that an
12 oil pipeline can be built without unacceptable
13 damage to the environment. I would like to hear in
14 an organized fashion from the appropriate witnesses
15 later on in the Inquiry, the evidence for that
16 proposition.

17 Certainly, we can't ignore
18 these highways. But this all began when you
19 wanted to ask Mr. Hemstock whether he thought I should
20 report on the highway, and I think that you can
21 leave it to me to make up my own mind about those
22 things, and for what it is worth, you now have the
23 benefit of my thinking.

24 MR. TEMPLETON: Okay.

25 Mr. Hemstock, does your impact assessment, and the
26 opinions in your report consider looping as part of
27 the project description?

28 A No, sir.

29 Q Would your impact be
30 different if it had? Would your impact assessment,

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1 I mean, been different?

2 A I think it would not
3 be markedly different if it had. It is a matter
4 that we have not studied in any great detail. We
5 recognize that if looping is to take place there
6 will be a further hearing, an assessment at that
7 time when that particular action is proposed. Very
8 briefly, in my considerations I think that looping
9 will have a very minor impact because it will use
10 the same facilities, it will use virtually the
11 same pipeline right-of-way. I really don't think
12 that there will be much environmental impact involved
13 in a looping of the gas pipeline.

14 Q I think you said
15 that you assumed that there would be another
16 impact assessment?

17 A Yes, sir.

18 Q So, perhaps would you
19 agree that one of the terms in the conditions that
20 we should suggest to the Commissioner would be that
21 he recommend that before looping is approved, a
22 new impact assessment be made?

23 MR. MARSHALL: Sir, this
24 gets into an important question insofar as the
25 development of this Inquiry in its later phases and
26 so on, and that is a point that Mr. Scott raised the
27 other day of asking witnesses whether or not they
28 agree that certain terms and conditions ought to be
29 imposed. I have quite a bit to say about that at the
30 appropriate time, and I am sure that Mr. Scott does

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1 as well. I think it might be more productive if
2 Mr. Scott and I and Mr. Templeton and others were
3 to discuss this, perhaps in the context of whether
4 or not there is going to be separate consideration
5 of regulation, if you like in this Inquiry, and
6 whether or not participants are going to submit
7 terms and conditions that they propose to urge on
8 the Inquiry and whether or not there is going to be
9 an opportunity to assess those and various things
10 of that sort. There are various ways you can
11 categorize this, and ultimately I suppose one
12 can say it gets to the argument before the Inquiry
13 as to what should be an appropriate term or
14 condition.

15 Really, I would like to
16 have this question deferred to a later point in
17 time, until we have had a chance to consider more
18 fully how it is we want to deal with this entire
19 subject of terms and conditions.
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1 MR. SCOTT: I suggest that
2 perhaps as a matter of convenience it should be defer-
3 red, but at some point before this panel leaves, it
4 seems to me it will have to be dealt with, and I take
5 it that apart from Mr. Templeton's specific question,
6 the issue is this. Is it permissible to ask and to
7 expect the independent experts to answer what they
8 would propose as terms and conditions within their
9 specific fields of study? That's the question that I
10 indicated the other day when Mr. Veale was asking
11 questions that I proposed to ask in part, and this is
12 really, I think, the question that Mr. Templeton posed.

13 Mr. Marshall has indicated to
14 you and to me that he doesn't regard that as an
15 appropriate question, and it seems to me that that
16 issue is going to have to be resolved by you, and
17 really what remains is to pick a time to do that, when
18 -- before this panel leaves. If you want to do it now,
19 I'm agreeable to doing it now. If you want to do it
20 later, it can be done later as well.

21 THE COMMISSIONER: Well, let's
22 do it now because Mr. Templeton has raised the whole
23 question, but the proposal you made yesterday, Mr.
24 Scott, was this. You said, "I'm going to ask these
25 gentlemen what terms and conditions would you lay down
26 on this proposed gas pipeline, having regard to
27 your own specialty, in your own specialty, within the
28 area of your own discipline?"

29 Subject to what Mr. Marshall
30 may say, I don't see anything wrong with that. Mr.

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1 Templeton is asking Mr. Hemstock, "Do you think there
2 should be recommendations," this isn't a term or
3 condition really, I don't suppose, maybe it is, I
4 guess it is, "could be attached to the right-of-way
5 that there should be no looping without another
6 impact assessment?" I thought that was the -

7 MR. SCOTT: Well, Mr. Commis-
8 sioner, as a lawyer I would have said that Mr. Temple-
9 ton didn't have to ask that question because when
10 Mr. Hemstock said they hadn't considered looping, and
11 when he had said that he assumed that therefore that
12 the environmental impact assessment of looping would
13 be considered elsewhere, I would have thought that that
14 dealt with that matter as far as we could go. But --

15 THE COMMISSIONER: Mr. Temple-
16 ton isn't the first advocate before this tribunal to
17 try to get the witnesses to agree to things that
18 he wants to put in argument. Apart from the usefulness
19 of the question or of the answer, though, and having
20 regard to what Mr. Scott has said he intends to do,
21 Mr. Marshall, do you object to what he intends to do?

22 MR. MARSHALL: Well, sir, I'm
23 handicapped somewhat in responding because it's not
24 really clear to me what the intention of the Inquiry
25 is later on. That is, will there be, as Mr. Scott
26 has mentioned a couple of times, a regulatory phase
27 if you like? Nor is it clear to me whether or not
28 other participants are going to formally or informally
29 catalogue various terms and conditions and submit them
30 so that they can be scrutinized by the two applicants

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1 so that some sort of a reasonable appraisal can be
2 made of them, and a response given as to whether or
3 not it's considered they're appropriate, they're
4 workable or they're unworkable, or whether or not
5 the applicants would be prepared to undertake certain
6 of those recommended terms and conditions.

7 THE COMMISSIONER: Could I
8 interrupt you for a minute?

9 MR. MARSHALL: Yes sir.

10 THE COMMISSIONER: You've put
11 your finger on it. What I don't -- I still don't
12 understand this so-called regulatory phase, and as
13 far as I'm concerned, there are four phases in this
14 thing and somewhere we have to work in the evidence
15 about the oil pipeline. We've already arranged to go
16 to the delta for / ^{a month} and we're going to hold some
17 southern hearings, and I intend to hold those when
18 we've heard all the evidence from the north, I can go
19 south to hear what southerners have to say and you
20 gentlemen will have that time to prepare your final
21 summations. At that stage I anticipate you will say,
22 "Now, Mr. Commissioner, you should say to the government
23 that the impact will be minor, major, or something
24 in between, in all of its ramifications." Then you'll
25 say, "And you should tell them if they build this thing
26 these are the terms and conditions which should be
27 imposed," and I would expect that Commission counsel and
28 Dr. Fyles' staff, and I've been nagging them privately
29 on this whole subject, will prepare in advance of
30 final submissions a whole set of terms and conditions

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1 they want me to consider imposing, and you people
2 can say they're no good, or they're all right, or
3 should be modified, and then we've got something to
4 go on. Now that -- and of course they're having
5 difficulty preparing these things because like all
6 of your people, they're tied up with the hearings
7 and -- but we'll hopefully, as we move into the new
8 year, they'll be able to get at this whole subject.

9 Now, that's the way I see us
10 proceeding, and I still don't understand this regula-
11 tions phase.

12 MR. SCOTT: Well, Mr. Commis-
13 sioner, perhaps it would be helpful if this issue is
14 going to be debated if I outline
15 (a) what I propose by way of questions to this panel.

16 THE COMMISSIONER: All right.

17 MR. SCOTT: Mr. Marshall is
18 objecting to them and he should perhaps hear what I
19 would propose to do before he hears objections.

20 THE COMMISSIONER: And before
21 I rule, do you think?

22 MR. SCOTT: I would hope so.
23 Secondly, though I regard Mr. Marshall's reference to
24 it as a red herring, I'll try and outline in brief
25 fashion what is contemplated by ^{the} so-called regulatory
26 phase. Now, sir, as I see --

27 MR. MARSHALL: I don't know
28 what you're talking about, Mr. Scott. I'm not suggesting
29 anything is a red herring.

30 MR. SCOTT: No, I'm suggesting

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1 it.

2 MR. MARSHALL: I'm suggesting
3 in order to be able to comment on this question it
4 seems to me we have to put it in the context of what's
5 going to happen in the rest of the Inquiry, that's all.

6 MR. SCOTT: Let me attempt to
7 do that. The evidence that the Inquiry is hearing now
8 is the evidence of experts who are attempting to predict
9 the impact of the pipeline on inter alia, caribou,
10 birds, etc. They're giving their professional opinion
11 as to the anticipated consequence on those forms of
12 life, of that project. From that you will be obliged
13 to conclude what the impact is, that's Page 1.

14 The second stage is to attempt
15 where possible, to formulate terms and conditions
16 or recommendations to the Governor-in-Council that
17 will minimize the impacts, or which will guarantee that
18 the impact, the acceptable impact contemplated by the
19 applicant's experts will in fact occur, and you can
20 imagine some of those -- the first obvious condition,
21 I presume, is that the project should, as the applicant
22 says, be constructed in winter, that that should be a
23 term or condition, if it is not already a term or
24 condition by virtue of the proposal, because it seems
25 to me without that term or condition being attached
26 to the project, as a condition precedent, much of what
27 we've heard falls to the ground, if not all of it.

28 So the second stage is to
29 attempt, with the assistance of the parties, to formulate
30 terms and conditions.

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1 THE COMMISSIONER: All right, so
2 far I'm with you.

3 MR. SCOTT: All right. But
4 that has to be done in this phase to a certain extent,
5 and that's why I want to ask questions about that.
6 Now you ask, "What is the regulation phase?"

7 Everybody has conceded that
8 no matter -- I think -- that no matter, and especially
9 Mr. Templeton, that no matter how valid and substantial
10 the terms or conditions may be, no matter how precisely
11 they may be formulated, no matter how adequate they
12 may be to respond to the problem, there are problems
13 associated with the very implementation of those and
14 I'm not speaking merely of how regulatory agencies work.
15 The whole question of monitoring, the whole question of
16 on-site supervision, the whole question of control
17 either by the applicant, and Mr. Horte has spoken to
18 that at some length, or by other agencies and it's
19 really the problems inherent in that exercise that
20 will form the meat of what we have called the regulatory
21 phase.

22 THE COMMISSIONER: Well, I'm
23 with you altogether then, except the regulatory phase
24 might more aptly be called the enforcement phase, some-
25 thing along those lines.

26 MR. SCOTT: Very well, and the
27 reason for that is that while we might ask Dr. Gunn
28 to predict the impact on birds of this project, and
29 that he has done, and while we might ask him to stipulate
30 some proposed conditions, which is the issue that we

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1 now have to address, and while he might have useful
2 evidence to give on the subject of enforcement, how
3 you hire monitors who will do the job, it was thought
4 desirable that that part of the Inquiry should be hived
5 off to be dealt with in a separate regulatory or if
6 you will, enforcement phase.

7
8 Now that's what the regulatory
9 phase is about.

10 Now coming to the question that
11 Mr. Templeton proposes to ask and that I will propose
12 to ask, the situation as I see it is this -- and I
13 leave Mr. Hemstock out because Mr. Hemstock is an
14 employee of the applicant and there's nothing wrong with
15 being an employee of the applicant but he speaks in a
16 different capacity when he's before you -- the other
17 four gentlemen are all independent experts who are
18 being hired, and I assume being paid by the applicant
19 for their attendance here, I hope so; but that fact
20 does not alter their inherent independence. They remain
21 professionals who are not speaking for the applicant,
22 whose opinions have not been sold to the applicant, and
23 who are not mouth-pieces like lawyers are for clients .
24 They're independent professionals, experienced in a
25 certain discipline who have -- who are here and to a
26 certain extent the applicant takes a risk in calling
27 them. If one of them says, "Well, I think the project
28 is lousy," or "I think that this proposal is foolish,"
29 the applicant to a certain extent can reject that
30 evidence. But it may also be bound by it. So first of
all, they're independent experts.

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1 In the second place --

2 THE COMMISSIONER: I agree
3 with everything you say --

4 MR. SCOTT: All right --

5 THE COMMISSIONER: -- except
6 the applicant wouldn't be bound by it, we don't
7 have rules like that.

8 MR. SCOTT: All right, that
9 makes the point even stronger if the applicant
10 isn't bound by it, it seems to me.

11 The second proposition
12 is that they have measured the impact and in the
13 course of so doing, a number of them, in various
14 ways, have already proposed to the Inquiry terms
15 and conditions. I take as an example, for instance,
16 Dr. Gunn's testimony that it would be prudent to
17 have -- I forget the figures -- but 2.5 flights a
18 day, or it would be prudent not to fly below
19 2000 feet. Now, that really is, if I may say so
20 from Dr. Gunn, a proposed term or condition. He
21 is saying: "I measure the impact and the only
22 way the impact that I propose can likely be
23 guaranteed or assured, is if this condition is attached
24 to the project, that ordinarily planes will not fly
25 under 2000 feet." Now, I don't care what you call it
26 but that is a term or condition, and I think in the
27 studies that the experts have done, you will also
28 find terms or conditions that are set out in that
29 form or in a different form.

30 So the second stage that we

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1 are at is that in measuring impact and consequent
2 upon it, the experts have to more or less extent,
3 already put forward some terms or conditions and
4 really what I propose to ask, is whether there are
5 other terms and conditions that they would
6 propose or whether they are satisfied with the
7 terms or conditions that are now before you, either
8 in the reports, or as in Dr. Gunn's case, with
9 his addendum, in the formal evidence, and the reason
10 I ask that is because I think it would be a tragic
11 matter, they are not on a trial here, and I think
12 it would be a tragic matter if at the end of the
13 day, any of these gentlemen, or indeed anybody
14 else were to say, "Oh, I wish the Commissioner had
15 recommended that such and such be a term or
16 condition." I am sure that they don't want that to
17 happen, you don't want it to happen, I don't want it
18 to happen. The way to avoid it happening is to
19 ask them right here and now, We are not in an
20 adversary process, if they have anything to say to
21 you as to what the terms or conditions should be.
22 -- And I propose to ask them that so that all the
23 proposals will be fully before you and so that no one
24 will want to say after the exercise is over, "Oh, I
25 wish the Judge had recommended this", or "I wish
26 the Judge had recommended that." In other words,
27 now is the time to say that or forever after hold
28 thy peace, and that is the question that I propose
29 and I hope that it can be permitted.

30 MR. MARSHALL: Sir, I have a

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1 number of preliminary comments. I say 'preliminary'
2 because I didn't really follow all that Mr. Scott
3 said, but let me start by making a few coments.

4 As to a regulatory phase
5 I think we should make it clear that this is
6 something that Mr. Scott has spoken of a number
7 of times and we have discussed it with him.
8 There is no concurrence or agreement or commitment
9 on the part of anybody as far as I know to a regulatory
10 phase other than the part of Mr. Scott, and it
11 has never been ruled upon, as you pointed out.
12 Well, this is something that he suggested and he has
13 pointed out certain advantages and we have agreed
14 and there may be some disadvantages, but there has
15 been no commitment one way or the other insofar as
16 I know on the part of anybody.

17 Secondly, I think that
18 Mr. Scott said we're not in adversary proceedings.
19 In a sense, I think that is quite wrong. There are
20 certain areas of disagreement between Foothills and
21 Arctic Gas and there are some areas of disagreement
22 between the applicants and the various other
23 participants and these are adversarial proceedings and
24 they are not being held in a vacuum, there are other
25 adversarial proceedings involving the same subjects
26 going on at the very same time. I don't think that
27 we can lose sight of that.

28 Well, it seems to me that
29 overall, one might look at the various rules and
30 regulations, if you like that would have an effect on the

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way in which a project were carried out as being in three different categories, and this may be an over simplification, but there are rules and regulations set out by statute or regulation or the guidelines, if they have that sort of effect, and it seems to me that compliance with those rules and regulations is simply a matter that is required by law. It needn't be a term or a condition that those things be done. They are required by law and there are penalties if they are not done. It doesn't require and undertaking either. If you don't comply with the law you do so at your own peril.

Well, beyond that, Arctic Gas, and I think the same applies to Foothills, have both in their applications and in the evidence that has been given under oath before the Inquiry, undertaken that certain things will be done or will not be done.

Now, and it seems to me sir, that we have heard very considerable evidence about the recommendations that have been made by consultants and experts in various areas and counsel have responded to this sort of data by asking the company representatives whether or not the applicants are agreeable to accepting that advice and undertake that they are going to comply with that recommendation, whatever it may be. So you have, both through the application, and in the proceedings of this Inquiry, undertakings that certain things will be done and certain things will

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1 not be done.

2 Now, it seems to me, sir,
3 that while ultimately you may find that some of those
4 are inappropriate, it might be a fairly simple matter
5 to impose a term or condition that the undertakings
6 that have already been given be honoured, so that is
7 another category, and so then we end up in the
8 third category, it seems to me, of possible terms
9 and conditions, and that is additional things that
10 come out during the Inquiry due to the contributions
11 of other participants, or cross-examination or
12 whatever that may be, and I guess that is the
13 area that causes some difficulty. It seems to
14 me that one could look at it as being ultimately a
15 question of argument as to what additional things,
16 in addition to this very large body of things that
17 must be done either by statute or regulation, and
18 secondly have been undertaken publicly and on oath
19 and in the application. It is additional to that
20 and it is in that third category. Those really
21 get to be a question of argument, and either applicant
22 could well say, 'Now, we have undertaken to do those
23 things that we think ought to be done,' and in
24 their applications have stated, "We'd do it this
25 way, we are satisfied that the impact is going to
26 be thus and so. We have taken that position." It
27 seems to me, sir, it is fair for other participants
28 or Commission Counsel to go beyond that and explore
29 additional recommendations that may have been made
30 by advisors or consultants, and urge on the basis

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1 of those recommendations or the recommendations
2 of other witnesses before the Inquiry, that there
3 be developed as a result of the considerations of
4 those recommendations, further terms and conditions,
5 and we could argue about that.

6 But let's look at the
7 position of a consultant who has a recommendation
8 about a specific subject. Surely it can only be
9 that. We have a consultant operating in a particular
10 discipline, say, mammals, for example, and he would
11 be the first, I am sure, to admit, that he may
12 have concerns and may make recommendations with
13 respect to mammals, but insofar as implementation
14 of what would be an appropriate safeguard, so as
15 to have proper regard to the other environmental-
16 areas, economic considerations, construction safety,
17 governmental regulation, and so on, that it is
18 pretty inappropriate for him to design a term or
19 condition.

20 It is also, it seems
21 to me, somewhat inappropriate to ask a consultant
22 in an adversarial proceeding to be the one that in
23 effect is writing the report of the Inquiry. It is
24 almost like asking a witness at a trial to outline
25 the findings of fact that ought to be made by the
26 trial judge. YOU can ask the expert witness what
27 his recommendations are, but take to take it
28 beyond that and ask the expert witness to do the
29 report of the Inquiry, or an important element of
30 the report of the Inquiry, is to me somewhat unfair

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1 to that consultant. I don't really think that it is
2 necessary. It really gets down to a question of
3 argument on the final part of the Inquiry.

4 THE COMMISSIONER: Well,
5 Mr. Templeton, these people have all just taken
6 this thing right over from you--

7 MR. BAYLY: Mr. Commissioner,
8 if I may provide my two cents worth in this
9 argument, and I agree with Mr. Scott and I think
10 we could exemplify some of things that Mr.
11 Marshall is concerned with, there are things that
12 have already come out, and not only are they
13 things like the conditions that Dr. Gunn says
14 are a condition precedent to the impacts being as
15 he assesses them, that is .25 flights per hour
16 flying at 2000 feet, that is, with regards to
17 impact on birds alone, and we have people like
18 Mr. Jakimchuk in this very phase saying that certain
19 matters are game management matters, that is hunting,
20 off the Dempster Highway, for example.

21 Now, it seems to me, sir,
22 that we have a group of experts who don't have to
23 bind the applicant, but who can make valuable
24 suggestions to you. You are not a game expert. If
25 you are to either make up the terms and conditions
26 out of our argument or out of your own head, sir, I
27 think you would feel much better if you had the
28 assistance of these gentlemen with regard, not only
29 to recommendations for the applicants own rules, but
30 the kind of thing that Mr. Horte said when he said,

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1 "I want to see this thing regulated by one
2 government agency, and if it is regulated by a
3 whole bunch I don't think that we can build it."
4 It then becomes very important, sir, to discuss
5 regulation of this pipeline, if not in a separate
6 compartment, but at least as we go along. Now,
7 as far as I am concerned it matters very little
8 whether it happens in one or the other, although
9 my recollection, and I can't pin it to a counsel
10 meeting, I should say my understanding was
11 that we would discuss this at a single time and
12 I have even asked Mr. Scott if he would be willing
13 to bring back Mr. Longlitz at the appropriate time
14 so that we could discuss matters of regulation and
15 enforcement of rules that would apply to this
16 project.

17 That may not be Mr. Marshall's
18 understanding, I certainly cannot speak for him, but
19 it is not something that I would submit has been only
20 in the mind of Mr. Scott.
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1 MR. BELL: I also agree with
2 the excellent way in which Mr. Scott put the issue, and
3 I might add for Mr. Marshall's information that all my
4 thinking on this subject has been based on the assump-
5 tion that there would be such an enforcement phase.

6 As to Mr. Marshall's concerns
7 about our trying to extract additional recommendations
8 from experts which have been called by various parti-
9 cipants, which in my view is perfectly legitimate. It
10 may well be that they have ideas that we would want
11 to put to other experts to get their comments on. That
12 is the way in which realistic terms and conditions
13 can be developed through this process. I think that
14 it's a helpful thing to do. Thank you.

15 THE COMMISSIONER: Mr. Holling-
16 worth?

17 MR. HOLLINGWORTH: Well, sir,
18 by and large I go along with my friend, Mr. Marshall
19 first of all on the preliminary matters. By no means
20 has there been any consensus among counsel on this
21 business of a regulatory phase or an enforcement phase.
22 As I recollect it came up very early and I think it
23 was raised by Mr Templeton, and it was put on the
24 agenda of a counsel meeting once or twice, and after
25 that I haven't heard anything much about it except that it's
26 assumed that the matter will come up down the road
27 sometime.

28 I don't think we need to
29 comment on Mr. Scott's comment that these aren't
30 adversary proceedings. As far as --

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THE COMMISSIONER: I think he meant it's not a trial. I think that's what he meant, we're not bound by rules such as if your witness says so-and-so you're bound by it. I don't even apply that at trials, I don't think it's a sound rule and I certainly wouldn't apply it here, but carry on.

MR. HOLLINGWORTH: Well, other than the points Mr. Marshall has raised, I would amplify that with respect to asking consultants for the pipeline applicants whether there are recommendations that they would suggest, I think it's important to realize that at the offices of Foothills, and I imagine it's the same situation in N.E.S. and Arctic Gas, that there are a good many people running around, and a good many people in relatively narrow fields of knowledge who are consulting in that field, and for them to be brought up here and asked what their recommendations in a particular field is, to do so without reference to all the other considerations which might enter into it, and some of those Mr. Marshall has raised, there's economics, there's the engineering considerations, there are many other balancing factors against those and it seems to me a rather impractical sort of suggestion to ask a consultant what his recommendation would be in a particular field, and it can be expected that because he is a consultant to a pipeline company there's going to be a considerable pressure exerted on the pipeline company that that is the proper recommendation and they should not argue with it.

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This is what I foresee coming.

It might be all well and good that Dr. Gunn make some recommendation as to flights, and then it turns out to be totally impractical after. But I have this sense that because Dr. Gunn is a consultant to a pipeline company, there is going to be an overwhelming movement, if you like, to say, "Well, you're hung with that. You've got to accept that because your consultant said it."

There's another point, too, and I think Mr. Bayly brought this out in his cross-examination a couple of days ago when he said that it was difficult to make a recommendation as to a term and condition because he doesn't know whether it's going to be practical, and I think this applies to the consultants for the applicants as well as to Mr. Bayly.

Those are all the comments I have.

THE COMMISSIONER: Well, do you want the last word, Mr. Templeton? Do you want to say anything about this?

MR. TEMPLETON: Well, Mr. Commissioner, we were faced with this when we did our studies and we came to the conclusion that we could not express environmental impact without stating the assumptions we made, and the terms and conditions that were going to be put on the pipeline company; that's why our report included the Environmental Code and the Environmental Atlas with the site specific terms and conditions we applied. I don't know how you

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1 make an impact statement without saying how it's going
2 to be built. So I have been urging all along that
3 we get down to this and try to spell it out as we go.

4 MR. SCOTT: Mr. Commissioner,
5 could I make a short reply that really is two points?

6 First of all, whether there
7 will be a regulation or enforcement phase is beside
8 the point. If there is, we won't see any or many or
9 all of these experts at it. It will have to do with
10 enforcement, it will not have to do with terms and
11 conditions per se. So this is really going to be our
12 last chance with panels of this particular composition
13 to deal with this matter. That's the first point.

14 The second point can, I think,
15 be illustrated by example, and let's take Mr. Jakimchuk
16 because he hasn't left the room, as the example. He
17 has given us his assessment of the impact of this
18 project on the pipeline and with particular reference
19 to the Porcupine caribou herd. Now he might say --
20 I'm not saying he should or will, or that there's
21 anything to support it, it's just an example -- he
22 might say, "Look, it's a novel project, of major
23 proportions, I have predicted that the impact will be
24 modest but I think it would be prudent in the circum-
25 stances to impose in the construction season a bag
26 limit on all persons, native and white." Now that
27 would be his opinion. He can't separate his prediction
28 or I venture to say he can't separate his prediction
29 of impact from the conditions in which the work will
30 be done and the caribou herd exists.

Now, Arctic Gas may say that that's an absolutely ridiculous condition, it's impractical, it's unenforceable, it's inconsistent with the provisions of the Statute, and that may lead you to do a number of things. That may lead you to conclude that it's an absurd condition and shouldn't be applied. That may lead you to conclude that it should be applied in part. That may lead you to conclude that a recommendation should be made that as a condition of the grant of easement the Statute be amended, and the same with the flight restrictions, and the prevailing regulations. If Dr. Gunn says that the planes should probably fly at 2,000 feet, you may think that's right or wrong on all the evidence, you may think it's wise or unwise; you may think it's inconsistent with some regulation that exists. But it is still -- but you have still got this advantage, you have the advantage of having heard his opinion. "My assessment of the impact is that it is modest, but I would like to see these things done to ensure that my assessment will be proved out." Then you make the judgment as to whether that's an appropriate term or condition, and the applicant won't be bound by that, and indeed I anticipate that the applicant may well argue violently that some of the conditions that are discussed should not be applied, and it doesn't seem to me that it will be prejudiced by the fact that these experts have expressed their own view.

But the corollary is really extraordinary that we should go through this whole

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1 exercise without assuring ourselves that we have
2 heard from these people, what their view is. I mean,
3 really that's precisely what I propose to do, to ask
4 them what the conditions are that they would propose
5 with respect to their particular disciplines, and I
6 think to deprive the Inquiry of that information would
7 be a misfortune indeed.

8 MR. MARSHALL: Sir, I feel I
9 must respond to some of the points my friend has
10 raised. Clearly these are adversary proceedings,
11 and look at it this way as well, these same witnesses
12 will be appearing before the National Energy Board, which
13 is a Court of record, in adversary proceedings. Now to
14 suggest that a suggestion for a term and condition could
15 be made by a consultant to Arctic Gas or Foothills in
16 these proceedings, and that that would not be then
17 taken to bind Arctic Gas or Foothills in some way
18 before the National Energy Board is to me -- well, I
19 can't even comment on that, sir, it's ridiculous.

20 Now the E.P.B. is in a diff-
21 erent position, it seems to me. They are set up --

22 THE COMMISSIONER: Can I
23 interrupt you, Mr. Marshall?

24 MR. MARSHALL: Yes sir.

25 THE COMMISSIONER: I think
26 that's a fundamental mistake. Look, if Mr. Horte comes
27 here and he has been here and he has said, "I will
28 agree to this. I agree to that." Now before the
29 National Energy Board, if Foothills reads that out,
30 then it's very difficult for Arctic Gas to back away

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1 from it and say, "We don't subscribe to what Mr.
2 Horte says."

3 But if Dr. Gunn says, as he
4 does, Dr. Gunn's says the terms and recommendations
5 throughout his evidence, so has Mr. Jakimchuk, Mr.
6 Jakimchuk says, "We have recommended fencing of
7 compressor station sites and airstrips at strategic
8 locations to avoid conflict with caribou and grizzly
9 bears."

10 Now, before this tribunal
11 -- before this Inquiry that doesn't bind you; that's
12 what this gentleman thinks. It may be sound; it may be
13 unsound. You have paid for his opinion. You've brought
14 him here. At the moment I take it you're willing to
15 submit to that term and condition but you might very
16 well say, "We can't say to Mr. Jakimchuk, tell the
17 judge that but don't tell him that." If you bring him
18 here he's got to tell us what his opinion is in total,
19 so to speak, and you're still at liberty here, and I have
20 no doubt before the National Energy Board to say, "That's
21 our consultant's opinion, but it is impractical for
22 engineering reasons, on financial grounds, to carry it
23 out."

24 I can't imagine that the National
25 Energy Board, their rules are far stricter than those
26 of Courts of law. If they say to you, "You are bound
27 by a consultant's opinion," that's a rule that isn't
28 enforced in the Courts and I just can't imagine it
29 being enforced before the National Energy Board.

30 MR. MARSHALL: Well sir, there

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1 are assessments made as to environmental impacts before
2 the N.E.B., which is a Court of record, and a witness
3 called on behalf of a party who states his opinion as
4 to the impact, say on birds or mammals or fish, being
5 called by that party it seems to me that has a very
6 large bearing on the finding that's going to be made
7 as to whether or not a particular project is or is not
8 found to have been environmentally acceptable or
9 unacceptable. My point was that while this may be a
10 very open and new form of Inquiry --

11 THE COMMISSIONER: Excuse me --

12 MR.MARSHALL: -- we have to
13 have regard to the other inquiries going on at the same
14 time, which aren't structured the same way, and in
15 which the evidence of a witness called by a party is
16 regarded, in my submission, in somewhat of a different
17 light than you, sir, might regard it; in that you
18 may well think that a witness called by Arctic Gas,
19 it's of interest to have his views generally on a wide
20 range of subjects rather than simply on the subjects
21 that he was hired to work on and is being put forward
22 as a witness. It's interesting to find out/ ^{something} about
23 other experiences they've had and so on.

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1 THE COMMISSIONER: It is
2 more than interesting. I got Mr. Jakimchuk to tell
3 me in brief some of the measures he would adopt
4 on the Dempster to avoid the disturbance of the
5 Porcupine herd on their wintering grounds. Now,
6 that is something that I have to take cognisance
7 of. It may not be something that you paid him to take
8 a look at, but he is here, and I would like to know
9 what he has to say about it. It doesn't bind you,
10 it doesn't bind the Energy Board, it doesn't bind
11 me. I would just like to know what he thinks.

12 MR. MARSHALL: Well, sir,
13 I think that there is quite a difference between
14 recommendations and terms and conditions. Now, I
15 submit that an expert witness really isn't a code
16 maker or a law maker. He can identify areas of
17 concern to his particular discipline. It seems to me
18 that it is quite another matter to take those
19 recommendations pertaining to a particular subject
20 which may well be at conflict with recommendations
21 made by someone else before the Inquiry, or even another
22 witness called by the same party that testifies with
23 respect to another discipline. For example, you
24 have Dr. Gunn's recommendations, catalogued, and it
25 seems to me that those are a very different thing indeed
26 from terms and conditions that might be imposed. Those
27 are recommendations that seems to me would have
28 to be assessed by people involved in the construction
29 of a pipeline, people involved in operating aircraft
30 and so on, decide whether or not they can work, whether

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1 they can be acceptable or not, and to say to Dr. Gunn,
2 "What terms and conditions ought we to have?" is
3 asking something that's got kind of limited utility,
4 because without having the other viewpoints expressed,
5 you don't know whether you have got a workable
6 law.

7 So, I have no objection
8 to the witnesses being asked at great length about the
9 recommendations they make, and it seems to me they are
10 not law makers. Now, once a law is developed or a
11 draft law is developed, one may wish to ask an
12 ornithologist whether or not in his view that law
13 would be effective to protect birds. That seems
14 to me is an appropriate sort of thing to do, but
15 it is the middle step that gives me the problem,
16 sir. I just don't think that you can ask an
17 expert witness to be a lawmaker. You can ask him
18 whether or not the law is appropriate. You can
19 ask him his concerns and his recommendations that
20 lead up to the drafting of the law, but you can't
21 ask him to draft the law itself. That, I submit,
22 is the work of this Inquiry, and it is really the
23 ultimate work of the Inquiry and should be the
24 subject of argument.

25 THE COMMISSIONER: All
26 right. I think this has been a useful discussion.
27 It has interrupted the evidence, but I think it is
28 useful to clear the air and to clear our heads a
29 little bit from time to time. I think that these
30 gentlemen are here to predict what is likely to

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1 happen if the pipeline is built and where they feel
2 that damage and disturbance of substantial proportions
3 will occur, to recommend to us mitigative measures.
4 They have done both of those things in their prepared
5 testimony. I don't want to call the recommendations,
6 terms and conditions because that appears to be regarded
7 as a term of art and certainly I don't want these
8 gentlemen to pretend they are lawyers in the Department
9 of Justice drafting terms and conditions, but I
10 do think that we should have not only the recommendations
11 they have made in the prepared evidence, but any
12 other recommendations they feel should be considered
13 by the Inquiry that bear on their own field of
14 expertise, that's all; and on that footing I'd be
15 willing to see Mr. Scott, and of course you, Mr.
16 Templeton, put the questions that you have asked that
17 you be allowed to put. That, it seems to me, disposes
18 of the matter. I am not asking these gentlemen to
19 write my report. I am not asking them to be lawmakers.
20 I am asking them for their recommendations regarding
21 important questions that they know more about than
22 I do in the very nature of things, and the best
23 example I can give you is of course the example that
24 I gave earlier, Mr. Jakimchuk's recommendations
25 regarding the Dempster. He outlined those briefly and
26 that is the kind of thing that I am interested in.
27 I don't want you to repeat all of the things
28 you've said in here, we've heard that. But if there
29 is anything else by way of recommendation that you
30 think we should have in mind, I would like to hear it.

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1 The whole question of en-
2 forcement is quite another question and I don't
3 think it is right to dignify that question, or at
4 least it is a dignified and important question, but
5 you don't -- when you say "phase" I keep thinking
6 of panels and panels and so forth and so on, and
7 it isn't going to take us all that long. But if
8 we lay down, at the end of the day terms and conditions
9 -- I am talking about argument now -- if we lay down
10 terms and conditions, we owe it to the government to
11 say it is plain that to enforce these terms and
12 conditions there are certain things you should do.
13 Mr. Horte has already told us one. Have one body
14 to enforce them all.

15 I have been to Alaska, I
16 have asked General Rollins about enforcement. He
17 told me how they go about enforcement in Alaska.
18 That is what I conceive the whole subject of enforcement
19 to entail. How many of these inspectors do you
20 have on each spread? Mr. Hemstock has been dealing
21 with enforcement and says we will have so many
22 inspectors on each spread, and they will discuss
23 things with the spread manager and then they can
24 go over his head and so forth and so on. That is an
25 enforcement and we have been discussing the whole
26 thing all along, and we may, I take it, hear some
27 witnesses from Alaska, they can be cross-examined and
28 that will shed further light on that whole subject.

29 But I am grateful to you,
30 Mr. Scott especially, for a very lucid explanation

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1 of the way you anticipate this thing going and I am
2 grateful to the rest of you for your comments. Well,
3 we will adjourn for coffee and then we will come
4 back and you can put that question again.

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6 (PROCEEDINGS ADJOURNED FOR A FEW MINUTES)
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(PROCEEDINGS RESUMED PURSUANT TO APPOINTMENT)

THE COMMISSIONER : All right,
gentlemen, ladies.

MR. TEMPLETON: Q Mr. Hemstock, would you recommend that before looping is proceeded with that another impact assessment be prepared?

WITNESS HEMSTOCK: Yes, I would expect that an impact assessment would be required before looping.

Q Since you prepared your impact assessment in Volume 14-B, I believe there have been some alignment revisions, the cross-delta route and the Simpson re-location; is that right?

A That's right.

Q Do you -- are you going to prepare a new impact assessment to express an opinion on the whole new route?

A No sir.

Q Pardon me?

A No sir.

Q Well, does this not produce problems when you make changes and say, "Well each individual change isn't too significant, but when you add all of these changes on top of one another perhaps it becomes significant."

A No, I don't believe that that follows.

Q Well, I think there have been a number of references to the multi-disciplinary

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1 meetings in April '73 which I was present at, and I
2 think you were, but those -- that meeting did not
3 include a discussion of the cross-delta or the Fort
4 Simpson re-alignment; is that right?

5 A That's right.

6 Q I don't remember it
7 having even been brought up, although that's what the
8 exercise was about, was alignment. Is that right?

9 A I think that there was
10 some discussion about the Fort Simpson change, or at
11 least there was a question, as I recall, about the
12 fact that the then prime route crossed both the Liard
13 and the Mackenzie.

14 Q Well, do these two re-
15 locations, have they been subjected to the same type
16 of inter-disciplinary or multi-disciplinary review as
17 were the original alignments?

18 A Yes sir.

19 Q Mr. Hemstock, I think
20 a number of your consultants have stressed the use of
21 an inter-disciplinary approach. I think Dr. Morgenstern
22 even went farther and said that he used an ecosystem
23 approach, and I don't want to detract from the good
24 work that you've done but if an inter-disciplinary
25 or ecosystem approach has been used, how can you accept
26 the cross-delta route or the Simpson re-route until the
27 environmental and social studies have been done?

28 A Well, we have for the
29 Simpson route, when we first considered the possibility
30 of changing, we checked with the environmental experts,

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asked them what their preliminary recommendations would be, what they think of the possibility of that route, see if they, with their experience have any difficulty with it. If there appears to be no problem from the environmental standpoint, and the engineering standpoint, there may be some advantages that are obvious, then we begin the detailed studies and as these things go along you eventually come to a place where you can make a decision that you should go ahead even though the -- and make this your prime route, even though you have not yet completed all of the studies.

It was very much the same with the cross-delta route. I think that right from the start the reason that the route around the delta was chosen was on the basis that a conclusion had been reached that probably from an environmental standpoint that was not a satisfactory route. However, as our studies proceeded and I, I think, was the one that suggested that that route should be considered so that -- and we again took a preliminary look, we checked with our environmental people, and as I recall I mentioned it to the Environmental Protection Board a long time before we decided to make that the prime route.

We begin our studies and as these proceed, some of the concerns^{are} alleviated. The engineers, for instance, find that they, it would appear that there are several engineering advantages to it. Our first assessment of the cross-delta route from an environmental standpoint was^a preliminary one that was filed, I think, last July on the basis of

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1 preliminary studies, and of course on the basis of
2 the experience of the various consultants.

3 There was nothing at that time
4 to indicate we should turn it down, or that we should
5 discontinue our studies, so they have in fact then
6 carried on and I think some of the people are just in
7 from the field. But at a certain stage it appears that
8 most of the concerns can be taken care of by timing
9 or by routing or by some other factor, and we then
10 just on a basis of judgment have decided that that
11 should be the prime route.

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Q But this decision to adopt the cross-delta route was not arrived at in an inter-disciplinary fashion because you haven't done your studies yet, have you? Or you haven't completed your studies yet, have you?

A Yes, we have completed them.

Q You have?

A There may well be more studies next year but we have certainly completed them to a state that we feel they meet the requirements of the application.

Q Your goal is to meet the requirements of the application, is that what you said?

A Well, the studies have proceeded to a stage where we believe that the cross-delta route is a viable route, that it can be built without serious environmental impact, and that, as compared to the other alternatives, it is now our preferred alternative.

Q Well, I realize it's the company's preferred, and I'm not disputing that; but I think two of your consultants have expressed reservations until their studies are done. Isn't this right?

A Two of the con-- I think that Dr. Gunn has expressed some reservations, but I believe that he feels that his studies have gone far enough to let him make the recommendations and point out to us where his concerns are.

Q Well, perhaps I could ask

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1 Dr. Gunn. Are you recommending the cross-delta route?

2 WITNESS GUNN: As the
3 application for the cross-delta route has been filed,
4 we have indicated a preference for the old prime
5 route. However, we have some suggestions about what
6 might be done in the way of changes in the engineering
7 design that might probably affect our recommendation
8 in that regard.

9 Q Yes, your studies are
10 still perhaps incomplete at this moment, is that right?

11 A No, our studies are
12 complete. We are finalizing the writing up of the
13 work that has been done. The work has been done.

14 Q And you expect that
15 this will involve a recommendation that -- ~~It's~~ see
16 now, I don't want to --

17 A As matters now stand,
18 we have submitted our opinion that we prefer the old
19 prime route as against the cross-delta route.

20 Q Yes.

21 MR. SCOTT: Mr. Commissioner,
22 could I ask Dr. Templeton to pursue that so that it
23 won't be overlooked later? What are the changes that
24 Dr. Gunn wants? Excuse me. Dr Templeton, but just so
25 it won't be overlooked later.

26 MR. TEMPLETON: Go ahead.

27 A Well, sir, we have some
28 detailed suggestions about this. I felt it would be
29 more appropriate to bring it out before the hearing
30 at the time of the cross-delta hearing, but --

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1
2 THE COMMISSIONER: Well, that's
3 fine. Let's leave it until then. Otherwise we'll go
4 through the same stuff twice. Some say we do that
5 now, but at least let's not do it deliberately.

6 MR. TEMPLETON: Q I think,
7 Dr. Gunn, the only question I have left on that subject
8 is the -- was this arrived at in an inter-disciplinary
9 way, the route, that you participated on behalf of
10 your discipline?

11 A Sorry, I have some
12 trouble with your question, sir. Would you simplify
13 it a bit for me?

14 Q Well, we've been having
15 a great deal of discussion about the route selection is
16 done in an inter-disciplinary fashion, taking into
17 account all of the various disciplines that are involved.
18 I was asking in your opinion was this method used in
19 arriving at the cross-delta route?

20 A I can simply describe
21 to you what I know about the decision-making process.
22 There have been several meetings at which the con-
23 sultants have presented their views together at the
24 same meeting, so that each consultant is aware of the
25 views of the other consultants, and we have discussed
26 them. However, we have then made our own disciplin-
27 ary recommendations and on the basis of that I would
28 suggest that Mr. Hemstock and his management have made
29 their decision.

30 Q Mr. Hemstock, as I understand
it, as Dr. Gunn explained, the consultants have made

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1
2 their recommendations to you and you have made the
3 decisions about the action you will take and as I
4 understand your evidance, you prepared the impact
5 assessment taking into account all of the advice from
6 your consultants and staff. Is that right?

7 WITNESS HEMSTOCK: Yes.

8 Q Well, did you use the
9 multi-varial analysis to arrive at your assessment?

10 A The what?

11 Q I don't think they had
12 that term when you and I went to school. I guess if
13 you don't know the term, I guess you didn't use it.
14 You perhaps used a more subjective way, the same as I
15 did. Mr. Hemstock, I'm not sure that I've got the
16 right thing, because during the mail strike I've had
17 a hard time getting transcripts and haven't been able
18 to read them too thoroughly, but I think I read
19 somewhere that you made some reference that you might
20 not be around when some of these proposed actions were
21 taking place. Whether that's to do with your age or
22 you're going to retire --

23 A I think I said that I
24 might not be around.

25 Q I see. Well, if you're
26 not around, then all of these recommendations, verbal
27 recommendations that have been given, how are they
28 going to get implemented? You're up in that --

29 A What verbal recommendations?

30 Q I think all of the

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1 consultants have said regularly through the hearings
2 that they have made recommendations about things, some
3 on telephones and verbal and all this sort of stuff,
4 and what I am wondering about is if you're not there
5 how are they going to get implemented?

6 A Well, I think that most
7 if not all of the recommendations which have been made
8 by the consulting people have either appeared in
9 reports and Dr. Gunn has actually collected his
10 recommendations into a single report, Mr. Jakimchuk
11 again, his recommendations appear all through their
12 reports and he is bringing them together into one
13 document, Dr. McCart's report -- recommendations are
14 in several volumes of their report, and the appli-
15 cation itself stresses a good number of the recommen-
16 dations. So that I think that most if not all of them
17 are in documented form.

18 Q You believe that all the
19 recommendations that have been given are actually in
20 some form or other before the hearing already?

21 A Yes, I think they are, yes.

22 Q Dr. Banfield, I was--
23 with reference to your statement about worst case
24 analysis, I think you said on Volume 89, page 13518,
25 you discussed the --you compare the engineering tech-
26 niques of 50-year floods and 100-year seismic risks and
27 then you go on to say:

28 "Unfortunately, we have not built up many of
29 the required data for Northern Canada to offer
30 a valid worst case prediction."

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1 Do you believe that there is
2 historic data to design the engineering things like
3 capacity of bridges and culverts on the Dempster and
4 Mackenzie Highway?

5 WITNESS BANFIELD: I don't
6 think that I am competent to answer that question.
7 You're an engineer, sir, and I'm a biologist.

8 Q Mr. Scott once told me
9 that the lawyers don't answer questions, they only
10 ask them, but I'm not a lawyer so I'll -- I'll offer
11 the opinion that I don't think there is runoff data
12 in the Mackenzie Valley, and I think my point was
13 that subjective judgment must be used on these
14 engineering things, the same as for biological things,
15 and I wonder if, bearing in mind that it's a very sub-
16 jective process, why you can't accept the privilege
17 of the Board presenting a worst case matrix based on
18 experience and judgment and subjective, whatever sub-
19 jective matters they can apply to it?

A I can accept that as long as people appreciate that it is in fact entirely what I call scenario, it is -- I prefer to call it Doomsday scenario type, it is a multiplication of unlikely events. I think the ultimate interpretation of such a scenario, for instance, if you woke up in the morning and considered all the risks that you were to face that day, from breaking dishes and cutting your hands, cutting your face in shaving, falling down the front stairs and being run over, when you left your house, those are all definite risks and, you know, if you operated on that basis you would stay in bed all day--

I am sorry, I am being a bit facetious, but I am trying to put into perspective, what is the true realities of building up a series of 1 in a million chances and assuming that, sure, you end up with a risk, and as I say, you face this risk every day and we learn to live with it.

Q Do you consider the worst case matrix that was presented by the Board a one in a million probability?

A I can't answer that and I doubt whether you can.

THE COMMISSIONER: You know you can't answer it and you what?

A I doubt whether anybody could supply the figure one in a million. It might be one in a billion, it might be one in ten million --

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1 MR. TEMPLETON: That figure
2 was not mine. The figure was yours. I was asking
3 whether you thought the worst case analysis that
4 was presented was of that magnitude of probability.

5 A May I see it? Can you
6 refer it to me?

7 Q Well, you know, I came
8 from Ottawa, not Winnipeg, so I didn't have the --

9 THE COMMISSIONER: The
10 matrix is here -- it is in that --

11 A This is a value
12 judgment that I am about to make. Well, I am glad
13 I saw it. It is not a worst case matrix, it is an
14 interaction matrix. The title is, 'Potential Inter-
15 action Matrix'. I think it is a value judgment. It is
16 more a typical environmental matrix document which

17 I mentioned the E.P.B. had in fact followed this
18 method.

19 Reading the detail, I don't
20 see any indication that it is necessarily a worst
21 case. It is in fact an identification of concerns
22 which many of us believe is the best use of such
23 a matrix. You identify concerns.

24 THE COMMISSIONER: Dr.
25 Banfield, if I could just interrupt. You are really
26 saying that however you dress up all of these
27 methodologies, it comes right down to a matter of
28 judgment really in the end, that they are not
29 objective findings. This is ^{still a} dominant element, a
30 subjective element in that a great deal depends on

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1 your cast of mind, your predilections, and your
2 own experience. Isn't that about the size of it?
3 Didn't that reflect your attitude towards all of these
4 methodologies?

5 A Yes, sir, it does
6 precisely. My only point is that we should all
7 recognize that that is the basis of our predictions.

8 MR. TEMPLETON: Well, I don't
9 think that anybody is disputing that. You would
10 agree though, that there is a potential matrix,
11 which is a -- whether you would call it worst case
12 or not -- and then a probable one, and so that those
13 two have been presented there. There are two matrices
14 presented: one, a potential; and one a probable.

15 THE COMMISSIONER: Excuse
16 me. I remember you explaining these matrices in
17 detail back in June and it's --

18 A You will have to help
19 me. I see only one matrix and it is labeled, "Potential
20 Interaction Matrix."

21 Thank you. I now see the
22 second matrix on the second page.

23 MR. TEMPLETON: On the
24 left-hand page is the potential and on the right-hand
25 page is the probable by regions. I was wondering from
26 your testimony, Dr. Banfield, if you considered that
27 this was the Board's only method of predicting impact?

28 A No, sir.

29 Q Well, I wondered when
30 you said that you considered the matrices, I think you

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1 used the word, "pretty", and I wonder if you had
2 read what the Board said about that in its introduction
3 of Volume I, page 2, and perhaps I could read it
4 because I don't have enough copies. It is only one
5 paragraph:

6 "The Board's approach to assessing impact
7 was to use analytical techniques such as
8 simulation modeling and matrix analysis.

9 The value of these techniques is that they
10 bring into focus the components of the problem
11 and their interrelationships. But the basic
12 decisions on impact were made by the Board's
13 group of experienced scientists and engineers
14 with different backgrounds and skills.

15 This interdisciplinary group studied the
16 whole project in the light of environment
17 protection and reached opinions to some
18 extent subjective as to what impact would
19 actually occur. The scientific process in-
20 volves the application of judgment to a
21 collection of data, and that is what was
22 done here."

23 Do you disagree with that?

24 A Well, I can't disagree
25 with your statement, sir. I believe that further
26 on you mention that you had trouble in developing
27 the simulation modeling and I think that was later
28 abandoned. The other part, the end of it, the
29 interdisciplinary group study, is a well recognized
30 method, it is usually called the Delphi System, and

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as I said, you did not use only the matrix. I agreed with you.

Q But I think we have come to the agreement that it is judgment that you come down to and the tools are used to prepare you to make the judgments, do you agree with that?

A Yes, what I have been saying is that today in environmental impact assessment, these are the tools that are available to us and in my testimony in chief have said something very similar to this, to say that, I think it is the very end of my testimony, that I, too, have had to use my -- to admit that it is largely a subjective value judgment, but it is based on the quantitative data and the studies and experimental studies undertaken, sponsored by the applicant and undertaken by the other consulting services.

Q Yes, I think that we are in agreement with that. What I was disagreeing with was you seem to be saying that the Board did not do that and what I was trying to see whether you had reviewed the methodology used by the Board to allow you to say that.

A Well, please point out
to me where I said the Board did not do that.

Q Well, I think I could refer you to the word, "pretty," for one.

THE COMMISSIONER: Well, excuse me, now that Dr. Banfield says -- there is nothing of substance at issue here, is there? Except

1 whether he said or didn't say something.

2 A The question to me was,
3 what do you think of environmental matrices, and as
4 I recall it, and I said they were pretty, and then
5 the rest of the --

6 MR. TEMPLETON: I think I
7 could give you the quotation.

8 A All right.

9 Q

10 "Have you as an environmental panel found
11 the Templeton matrix a useful tool after its
12 making to assist you?"

13 And your answer was:

14 "It is pretty."

15 A Well, I am sorry. The
16 question then was improper because it is not the
17 Templeton matrix it is the Leopold matrix and I should
18 have perhaps objected to the very question. My
19 comment was on the E.P.B.'s application of the
20 Leopold matrix method.

21 I was not present during
22 your presentation, but I have also -- was it June
23 3, 4, or 2, 3?

24 Q 2, 3, 4.

25 A 2, 3, 4, but I have read
26 the transcript and I remember particularly that you
27 had a slide show and you had these matrices and other
28 one s in other volumes on the slides and I remember
29 some of your consultants skipping over them saying,
30 "Well, you can't really see very much from this", or,

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1 "They don't show too much." I think one consultant
2 said, "I am sorry, it is upside down, let's go to the
3 other slide", and generally I believe you were one
4 of those whose comments were along that line and
5 so by the time you got to present it before the
6 court, I think you, yourselves recognized some of the
7 handicaps or the restrictions of the method.
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1 Q I think there's a differ-
2 ence, Dr. Banfield, between presenting a slide upside
3 down and being able to review a matrix as large as
4 that in a ^{hearing}. I assume that the matrix will be
5 reviewed a little more closely than portions of
6 a slide.

7 WITNESS BANFIELD: I hope so
8 too.

9 MR. SCOTT: Mr. Commissioner,
10 could this be followed up? As I read Dr. Banfield's
11 paper, his

12 "Environmental Assessment Overview,"
13 at least beginning on page 4, it's an attack on the
14 technique of the Environmental Protection Board, the
15 balance, ^{it} is expressed, beginning at page 4, where he
16 says:

17 "They rely on the Leopold Environmental Matrix
18 method,"
19 and then it's an attack on that method, and by the
20 clearest implication, even to the point of mentioning
21 their name, it's an attack on the Environmental
22 Protection Board's approach. Now --

23 THE COMMISSIONER: Well, he
24 does mention their name.

25 MR. SCOTT: Precisely.

26 WITNESS BANFIELD: Can you just
27 refer to the exact paragraph? I have it here.

28 MR. SCOTT: Beginning under:
29 "Environmental Impact assessment,"
30 at the bottom of page 4 and going on.

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1 A I think an excellent
2 example of an environmental impact matrix has been
3 presented by E.P.B.

4 MR. SCOTT: Yes, and then to
5 point out its deficiencies, and --

6 MR. MARSHALL: It didn't
7 say it's the sole approach, Mr. Scott. If that's the
8 interpretation you choose to put on it, it doesn't seem
9 to be what Dr. Banfield intended. He's talking about
10 the Leopold matrix, and in citing an example, it's
11 been used by the E.P.B.

12 MR. SCOTT: But the importance
13 of the matter, Mr. Commissioner, if it is simply this,
14 if it is that experts with different experience and
15 judgment may differ, and therefore the experts of the
16 Environmental Protection Board and Dr. Banfield and
17 his associates may therefore differ, that's one thing;
18 and that's obviously acceptable to everybody. But if
19 it is that there is some inferior technique that has
20 been utilized by the Environmental Protection Board,
21 that Dr. Banfield and his associates have put aside,
22 in other words if the techniques are different, we
23 should get into that.

24 THE COMMISSIONER: But we did
25 get into it. Let me make it clear that as I under-
26 stand it, Dr. Banfield says, "This Leopold method
27 identifies concerns but it does not enable you to
28 predict impact." He says, "It is a static instrument,"
29 He said that it doesn't go beyond these limited inter-
30 actions, doesn't go right along, say, the food chain

or things of that sort, and so he's saying, "We didn't use it." That's what he says. He says, "These people didn't use it." And he says why. Where is all this getting us?

A There is one

A Well, the first one is
J.C., 1972.

and this was in an environmental impact assessment seminar, "Philosophy and Methods", the University of Wisconsin, Green Bay, and I will give you a short quotation from Mr. Sorensen's paper:

"The basic problem,"

"The basic problem is the inability of a simple matrix format to depict the network of inter-relationships that actually develop between action(the cause) and the consequent environmental effects. It is well known that the environment operates as a complex system and cannot accurately be characterized by

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2 direct cause and effect relationships."

3 Another report by a Canadian expert sponsored by the
4 Department of the Environment, Ross, J.H. 1974,

5 "The Nanaimo Environmental Assessment Methodology.

6 The purpose of this paper is to present numerical
7 aids designed to assist decision-makers in the
8 task of assessing environmental systems. The
9 shortcomings of the Leopold system are numbered.

10 1. Only primary impacts may be identified.

11 2. No method of between-impact weighting
12 suggested.

13 3. No method of assessing the total impact
14 of a project is presented.

15 4. Questions or he questions the distinctness
16 of magnitude and importance."

17 Now I'm just -- I gave the client the benefit of
18 my readings and my understanding in this field, and
19 I did not single -- it's completely unfair to suggest
20 that I was accepting this as a Templeton matrix and
21 singling out the Templeton matrix for some criticism.
22 I really think it's unfair of Mr. Scott to infer that.
23 I was giving a professional view as to the usefulness
24 of the Leopold matrix.

25 THE COMMISSIONER: Well, I see
26 no difficulty here. This environmental impact
27 assessment business, art, craft, science, whatever
28 you want to call it, is in its infancy, and Mr. --
29 Professor Leopold's method is only a generation old,
30 as I understand it, and other methods are being devised.

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1
2 I don't think that anyone need take offence. His method
3 is subject to criticism.

4 MR. SCOTT: I know. I'm sure,
5 Mr. Commissioner, no one is personally offended by
6 any observations and I didn't intend to suggest that
7 that's what was at stake. But I understood Dr. Banfield's
8 paper -- I may have misunderstood it, but I understood
9 it to imply, if not state explicitly, that the Environ-
10 mental Protection Board had used the environmental
11 matrix of Leopold and that that was an inadequate tool
12 and that as a consequence of that, the clear inference
13 the Environmental Protection Board's views had been
14 achieved by the use of an inadequate tool.

15 Now it turns out this morning
16 that Dr. Banfield had not seen the matrix recently,
17 and I presume had not seen it when he prepared his
18 paper and commented just a few minutes ago that it
19 was somewhat different. But is there now with Dr.
20 Banfield any criticism of the tools that the Environ-
21 mental Protection Board has used?

22 THE COMMISSIONER: Well, I
23 would like to hear Dr. Banfield's comments on the
24 matrix, the potential inter-action matrix. I think
25 we've heard, the probable regional impact matrix.
26 Whether the fact that there are two matrices here
27 makes any difference to the views he's expressed, at
28 any rate I think we should adjourn for lunch.

29 Mr. Templeton, you have asked
30 three questions and the questions have been brief, to

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the point, and each has precipitated a discussion that's gone on, on each occasion for about 45 minutes, and I don't know how we'll get through the day. Well, we'll adjourn till two.

(PROCEEDINGS ADJOURNED TO 2 P.M.)

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

THE COMMISSIONER: Well, let's
come to order, and Mr. Templeton can resume with his
questions.

MR. TEMPLETON: Q Dr. Gunn,
on page 13427 of the transcript I think you pointed
out your concern/ ^{with} human presence in many areas, but
especially on the coastal spits and barrier beaches of
the North Slope. The Board in its code recommended
prohibiting access to these areas from June 1st to
September 1st, and based on your studies am I correct
in understanding that you'd recommend extending that
prohibitive period from May through October?

WITNESS GUNN: Sorry, are you asking me whether I would recommend extending that from May to October?

Q Yes. I thought you had recommended, that that was one of your recommendations.

A That is our general opinion, but I'm in principle leery of putting firm dates on such matters because of the great seasonal variation one encounters up there in terms of the weather and other conditions. So that I think that these things need to be evaluated and monitored closely each year. There is no point in putting out a

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2 regulation before it's needed or after it's needed.

3 It's important to get it on when it's needed and
4 for the full length of time that it's needed so that
5 while we say May to October, we also envisage that
6 there will be a monitoring system which will enable us
7 to set those dates more precisely from year to year.

8 Q Yes. You would then
9 recommend, would you, the May to October, subject to
10 some variation by the authorized officer or some
11 monitoring --

12 A Yes.

13 Q -- regulatory agency.

14 A Yes.

15 Q On page 13425, line 18
16 to 22, I think you pointed out the presence of the
17 islands in the Mackenzie, or the importance of the
18 islands in the Mackenzie to migrating geese, swans,
19 ducks and shore birds in the spring.

20 A Yes sir.

21 Q And on page 13429, line
22 12 to 16 you state that these are one of the areas for
23 which you have made detailed recommendations regarding
24 aircraft routing, altitudes and frequency of flights.
25 The Board in its code called for prohibiting air
26 traffic within two miles of the Mackenzie River during
27 May, airports excluded, and necessary overflights across
28 the zone would be above 2,000 feet and overflying the
29 islands. In view of your findings am I correct in
30 understanding that you would recommend that this apply

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1
2 in the month of June?

3 A The seasonal variation
4 again may extend the migration period into the early
5 part of June, so June has to be looked at as well as
6 May.

7 Q Well, would you agree
8 that that would be prohibited, subject to a certain
9 amount of variation due to the seasonal weather, subject
10 to the -- you'd give some authority to the regulatory
11 body in that case.

12 A What would be prohibitive,
13 sir?

14 Q Pardon me?

15 A You said would you agree
16 that that would be prohibitive. What did you mean by
17 that, sir?

18 Q Well, you would prohibit
19 air traffic within two miles of the Mackenzie River
20 during May.

21 MR.MARSHALL: I think the
22 problem is you haven't asked him whether or not he
23 agrees with what the Board has recommended.

24 MR. TEMPLETON: Oh, all right.

25 Q In our code, do you have
26 a copy there, Dr. Gunn?

27 A Yes, yes, we have.

28 Q Page 9.

29 A Yes.

30 Q Paragraph 14.2, page 9,

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1 do you -- this is regarding the restriction of aircraft
2 over the islands in the Mackenzie River between the
3 Camsell Bend and Inuvik during the month of May,

4 "Routings across this restricted zone shall
5 be at right angles to the river and should be
6 at a minimum altitude of 2,000 feet, and shall
7 avoid overflights of any river islands."

8 Do you agree with that, or would you like to change
9 that?

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1 A I agree with the business
2 of overflight of the island, sir. I think again, that
3 the two mile limitation needs to be worked out in
4 connection with the needs of the Ministry of Transport,
5 and also, one has to be careful in keeping aircraft
6 away from the Mackenzie River itself, that you are
7 not encroaching ^{on} rare and endangered nest sites that
8 may be, say, about three miles from the Mackenzie
9 River. In other words, there is a close fit that
10 you have to work out there, and I think this needs
11 to be developed in some detail, that an air traffic
12 route has to be developed so that it is the best
13 possible solution for the situation, but I agree in
14 principle with what you are saying.

15 Q So, perhaps if you
16 could agree with this and then add that if there are
17 site -- there may be site specific areas where there
18 might be a different regulation due to rare and
19 endangered species?

20 A Well, I would rather
21 leave it, sir, that it be worked out rather than
22 making a definite commitment now without knowing what
23 all the other factors are.

24 Q Well, the difficulty
25 that I have and have had since we started working
26 on this, is that, if you were there, I would be quite
27 happen to accept that you were going to regulate it and
28 I wouldn't worry. But I assume that you are not
29 going to be there and the problem is how to write the
30 recommendations out so that they will apply, bearing in

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1 mind that it is a very active, intensive development
2 going on and that you have to tell people, transpor-
3 tation companies, contractors, everybody else, what
4 are the conditions under which they are going to do their
5 work. So, I am struggling and I can certainly
6 sympathize with your saying, "I don't know what the
7 weather is going to be like," but you can also
8 see that you have to give some kind of direction
9 to the contractors and people working there.

10 A Well, we are dealing
11 with aircraft traffic and this is a matter for the
12 MInistry of Transport and I feel that knowledgeable
13 people must sit down with the Ministry of Transport
14 and work that out. There is no point in our in -
15 sisting that this be two miles away if this is not
16 a practical recommendation.

17 Q Well, there was the
18 exception of except to established air terminals in
19 the clause, wasn't there?

20 A Yes, I believe that
21 was somewhere.

22 THE COMMISSIONER: Well, if
23 the Department of Transport had no objections to this
24 recommendation, would you go along with it? Do you
25 think that it is appropriate?

26 A Yes, sir, I think
27 that some such regulation is appropriate, but whether it
28 has to be all of two miles is -- open some doubt, it
29 would be nice to have a two mile margin, but I
30 think there is a little leeway there which might

1 be used in the event that other factors would make
2 it difficult to maintain that two mile limit.

3 Q I think, Dr. Gunn, in
4 your Biological Report Series, Volume 14, Chapter 7,
5 page 277, you recommend that curtailing flights over
6 pre-migratory staging areas between August 15 and
7 September the 30th, with necessary overflights
8 avoiding areas of heavy snowgoose concentration,
9 and the Board wrote a paragraph, I think it is Item 14,
10 Volume 3, aircraft traffic, except to established
11 air terminals over the Yukon Coastal Plain shall
12 be prohibited for the period October -- between
13 October 15 and -- Sorry, August 15th and October
14 15th. Emergency traffic over this area during the
15 said period shall be restricted to I.F.R. flight
16 and such flights shall be carried out at a minimum
17 elevation of 5,000 feet above ground or water level.

18 Would you agree with that
19 or would you like to change that?

20 A Our recommendations in
21 Volume 14, sir, were written at the end of 1972. We
22 have since learned a good deal more about the
23 subject, and also, it has been pointed out to us by
24 the Canadian Wildlife Service that in some very
25 favourable years, that the snowgeese may remain
26 on the slope until October 15th. You have recognized
27 that in your recommendation.

28 However, this particular
29 recommendation points out the very thing that I refer-
30 red to before. I think that August the 15th and

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1 October the 15th are the outside dates. That is, the
2 earliest probable date and the latest probable date.
3 However, the mean arrival date might be somewhat
4 nearer August 25th and the mean departure date might
5 be somewhere near October 1st. So that again, there
6 are no use cutting off any summer activity before
7 the geese arrive, and there is no use delaying
8 winter activity once the geese have left, so that I
9 would expect traffic regulations to be applied within
10 this period, but depending on the particular situation
11 in the particular year.

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1 Q Thank you. Dr. Gunn,
2 I noted on page 13424 of the transcript, and also
3 13427 of your testimony you discussed the importance
4 in winter for ptarmigan of willow thickets bordering
5 on north-flowing rivers to the North Slope. I compli-
6 ment you. We missed that completely, and based on your
7 studies am I correct in understanding that you would
8 recommend restricting access to, and unnecessary distur-
9 bance of these areas from November to April?

10 A Yes, we would like to
11 see unnecessary disturbance prevented, and where there
12 is disturbance in such a case, as for instance in
13 winter construction, we would like to see, where the
14 construction has to cross such thickets of willows along
15 the river streams, that if possible the cut go across
16 at right angles rather than diagonally or down the
17 length of one. Fortunately, since most of the streams
18 on the North Slope run from the mountains, in a general
19 north-south direction, then most of the crossings will
20 be generally at a right angle.

21 Q So this is another
22 recommendation that you'd make?

23 A Yes.

24 Q Am I correct in saying
25 that you also made a number -- I'm sure you have --
26 made a number of site specific recommendations, and
27 I won't dwell on that because I haven't received a
28 copy of your report yet, but that these, too, I assume,
29 would be incorporated as your recommendations.

30 A Yes sir, I believe they

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1 are so incorporated.

2 Q Am I correct in under-
3 standing that your overall conclusion as to the
4 acceptability or the impact is that if your recommenda-
5 tions are not carefully followed that your assessment
6 of impact does not apply? Or maybe invalid?

7 A I think I have stated it
8 pretty clearly in my direct evidence, sir. I can
9 refer to that.

10 Q Yes. But you do agree
11 with that?

12 A Well, let me read --

13 Q Perhaps it's 13432.

14 A On page 49, sir, in
15 the last paragraph of my direct evidence -- do you
16 have a copy of that, sir?

17 Q No, I don't. Perhaps
18 you could --

19 A My last paragraph on
20 page 49 we have said:

21 "In sum, while we prefer the interior alternative
22 route, we believe it is possible to build the
23 proposed gas pipeline along the prime route
24 without serious long-term damage to bird
25 populations but only if our recommendations
26 are carefully followed and that particular
27 care is taken to avoid pollution along the
28 Beaufort Sea coast."

29 At the time that was discussed, sir, I made the point
30 of saying that that referred to what has been termed

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1 the old prime route rather than the revised prime
2 route which deals with the cross-delta route.

3 Q Yes. The next problem
4 I have, is how do we -- I think we're all faced with
5 this -- is how do we ensure that these recommendations
6 will be adhered to? I'm not trying to say that anyone
7 is going to deliberately not obey them, but work
8 doesn't always go the way it's sometimes planned, and
9 I wonder if you have any suggestions as to how that can
10 be accomplished?

11 A Well, sir, I foresee
12 two problems in that regard. One is that where a
13 specific case comes up, if it's not possible to, or at
14 least very undesirable from an engineering point of
15 view, perhaps not possible to comply with our recommen-
16 dations, that's one type of problem. The other is where
17 during -- and that type of situation would be known
18 before construction began, presumably. The other type
19 of problem might occur during construction or operation
20 where some particular change in the circumstances
21 makes it difficult to comply in the normal manner.

22 Q Well, how do we get to
23 the pilot and the bulldozer operator and fuel barge
24 captain, how do we get these recommendations of yours
25 to him so that he's going to recognize them and obey
26 them?

27 A In regard to that kind
28 of person, sir, sub-contractors and so on, I feel that
29 this is the responsibility of the applicant to see that
30 people in that position do carry out the recommendations

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1
2 and requirements that the applicant has laid down.

3 Q Well, is there not a
4 need then for something like, we called it a code but
5 you can call it another name if you wish, is there not
6 a need for something, in a clear concise way, so that
7 when contracts are called that they can be given to
8 the people that are going to be operating in the field
9 and say, "This is how you have to operate."

10 A I think that would be
11 very desirable, sir, but the requirements once they
12 are solidified, that they be gathered together and put
13 in some printed form that could be readily available
14 to every contractor and sub-contractor; but I also
15 think that there is an educational problem here that
16 needs to be gone into as well. It's more than just
17 handing a book over to someone. You have to talk to
18 them about it.

19 Q I see. You would agree
20 that there is a training program needed for all of the
21 people who will be working on the job, perhaps not
22 only even on the job in the field but in the home
23 office who are making decisions that are going to
24 affect the birds.

25 A I think it's very
26 desirable, yes sir.

27 Q Dr. Gunn, I'd like to
28 compliment you on the very professional assessment of
29 impact on birds that you've made. I think it was an
30 excellent job.

A Thank you.

Have you arrived at an opinion as to on the cross-delta route yet, or are you waiting your results of your field studies?

Q Are all of these

recommendations that you have made, and I think you made them on pages 13803 to 13808, you've made a number of recommendations to Northern Engineering Services, are they all written down or are they going to be written down?

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1 A Well, they are written
2 down if they are on pages 13808, etc.

3 Q No, I think those weren't
4 the recommendations, you said on those pages that you
5 were making those recommendations.

6 A We have, of course,
7 put a large number of recommendations down on paper in
8 various and sundry places.

9 Q The problem I have
10 though, Dr. McCart, suppose Foothills were given
11 the permit and your recommendations are contained in
12 some of the inside, internal information that is
13 given to Canadian Arctic Gas, how is that going to
14 get into telling Foothills what to do?

15 A Well, I would imagine
16 that anything that remains as part of the internal
17 information of Canadian Arctic Gas, may not in fact
18 be available to Foothills. However, I can do what
19 Dr. Gunn has done and put our recommendations down
20 on paper in the same form that he has. It simply
21 means going back over five years of memoranda,
22 etc., etc., and doing this.

23 Q Could these be produced?
24 Because I think that they would be very useful in
25 framing recommendations.

26 A I don't see any reason
27 why they can't be produced. It simply means, of course,
28 that we will do that while we are trying to do all
29 these other things that we're being required to do.
30 It may be some time, a month or so, before we can put

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1 them into written form.

2 THE COMMISSIONER: I think
3 that would be a good idea. It certainly simplifies
4 the work of the Inquiry and in the event that the
5 pipeline is built and Foothills builds it and the
6 recommendations that apply to the Mackenzie Valley
7 are important, I don't know / the North Slope, Foothills
8 eschews the whole notion of carrying gas from
9 Alaska. If Foothills were chosen I would think it
10 would be because the Government had decided that it
11 wanted to leave the North Slope inviolate, I
12 suppose. It is one of the considerations involved
13 here.

14 MR. TEMPLETON: Dr. McCart,
15 you completed your testimony by quoting and agreeing
16 with Dr. Wilimovsky's conclusion that the overall
17 impact on fishes would likely be minor. I think
18 Dr. Wilimovsky perhaps prefaced his concluding
19 remarks by stating that the predictions were not
20 valid for a different set of references and I would
21 assume that is true of your conclusion too. But
22 I think his conclusions were given before the
23 Simpson and cross-delta relocations were proposed.

24 A That could be, yes, I
25 don't know.

26 Q So that I am not saying
27 that you shouldn't quote him. I would just like to
28 point out that that quotation probably excludes
29 the Simpson and cross-delta relocation?

30 A Yes.

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1 Q I guess the next
2 problem, Dr. McCart, is how do we, to get the
3 recommendations used, is the same question I gave
4 to Dr. Gunn, what sort of control mechanism do you
5 think is necessary to make sure that these recommendations
6 that you've made are going to actually be implemented?

7 A Well, it seems to me
8 that ultimately it is the responsibility of the
9 government to ensure that the recommendations that
10 we've made and that they are aware of and may be
11 incorporate" into whatever terms come out of this
12 Inquiry, and others, that it is the responsibility
13 ultimately of the government to ensure that these
14 regulations are enforced.

15 Q Well, does an applicant
16 not have a responsibility in that, too?

17 A Ultimately it is the
18 government's responsibility. Certainly, the applicant
19 has a responsibility. It would be foolish, it seems
20 to me, for him to^{proceed} contrary to any terms and
21 regulations which have been laid down.

22 Q Well, I suppose that
23 it is a philosophical question, but if a person wants
24 to change the environment, does he not have a respon-
25 sibility to see that the changes are restricted to a
26 certain predetermined level?

27 A If a person wants to change
28 the enironment?

29 Q Yes.

30 A I see, in the sense that

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1 he is building a pipeline which is a change in the
2 environment?

3 Q Yes.

4 A Certainly, yes, and in
5 fact it seems to me that this is the job that we
6 have been given by the Applicant to tell him how
7 in fact he can/proceed with putting a pipeline in the
8 ground with minimal disturbance to the environment.
9 I think he sees the applicant as part of his
10 responsibility.

11 Q So this would require,
12 perhaps, some kind of a code or a vehicle that the
13 applicant is going to have his employees and contractors
14 and subcontractors obey and do as Dr. Gunn said, train
15 his workers and his people to understand how to
16 protect the environment.

17 A It seems to me that
18 ultimately the terms and conditions, the code, if you
19 will, under which the pipeline is going to be established,
20 is what this Inquiry is all about, and that of course,
21 having been given terms and conditions under which
22 the pipeline is going to be constructed, he has to
23 convey to the people operating under his control,
24 sub-contractors, etc., etc., what these terms and
25 regulations are and ensure that in fact sub-contractors
26 and what have you abide by these regulations, yes.

27 Q Yes, thank you.

28 Those are all the questions that I had for you, Dr.
29 McCart. I am sorry that I kept you here so long for
30 so few questions.

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1 Mr. Jakimchuk, does the
2 evidence you presented, I think excluded at the
3 time it was presented, the cross-delta routing, but
4 you now have some additional evidence, am I right
5 on that or not?

6 WITNESS JAKIMCHUK: I don't
7 have any additional written evidence on the cross-
8 delta routing, if that is what you mean.

9 Q Well, are your
10 recommendations final now for the cross-delta route?

11 A Recommendations? Oh,
12 we also have rendered a preliminary opinion on that
13 by way of a draft report which will be supplemented
14 with some additional field observations resulting in
15 a final opinion.

16 Q Well, you are recommending
17 the cross-delta route, is that right?

18 A I wouldn't say that
19 we are recommending the cross-delta route, no, sir,
20 we were asked to assess a cross-delta route and to
21 render our opinion as to whether or not it was more
22 or less preferable than the original prime route and
23 we have done that.

24 Q So really, the recom-
25 mendation is Mr. Hemstock's in his --

26 A Well, I understand that
27 a decision was taken based on the opinions that the
28 various consultants expressed, and that decision to
29 file for the cross-delta route was an Arctic
30 Gas management one.

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1 Q I see. Mr. Jakimchuk,
2 have you read this 'Towards an Environmental Code'
3 that we drafted?

4 A Yes, sir, I read it
5 some time ago and I have been refreshing my memory
6 on it a bit today.

7 Q Yes, I don't expect
8 you to have memorized it.

9 Were you in general agreement
10 with the mammal related clauses?

11 A I could, in the ones
12 that I have looked at, in general I was in agreement
13 with the concerns that they raised and in the
14 general approach taken to mitigate those. I would
15 have to comment on them individually though, to be
16 specific.

17 Q Yes, I realize that.
18 Well, perhaps we could do one or two just to see
19 how we get.

20 On page 9, paragraph 14.1,
21 "the harassment of birds and mammals by any equipment
22 or aircraft of any kind, owned, leased, chartered,
23 or rented by the permittee forces shall not take
24 place either within the pipeline system or any other
25 areas."

26 I would gather that you are
27 in agreement with that?

28

29

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1 A Yes sir.

2 Q Then on page -- or item
3 14.6,

4 "Aircraft shall maintain minimum altitudes of
5 500 feet above ground or water levels where indi-
6 vidual caribou occur, and minimum altitudes of
7 2,000 feet above ground or water levels where
8 migrating herds of caribou occur. Overflights
9 of caribou herds shall be prohibited during the
10 month of July."

11 Do you agree with that?

12 A I think I agree with
13 its intent, sir, but there are some things there
14 that I would state differently. For example, I don't
15 know what the basis is for apparently assigning
16 less importance to an individual caribou than a group
17 of caribou. It seems to me that the 500 feet, the
18 2,000 feet differential introduces a difficulty and
19 that it could be framed, the proposed regulation could
20 be framed somewhat more consistently.

21 Q I suppose the harassment
22 of one or a few animals is not perhaps as serious as
23 harassment of 30,000.

24 A Well, I think they're
25 both important. As I say, I agree with the intent of
26 that. I would state once again that based upon our
27 research, we established 600 feet as the threshold
28 point at which disturbance diminished to an almost
29 nil level added on 400 feet and felt 1,000 feet was
30 an adequate buffer, and 2,000 feet is even better, but

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1 it is not -- it may not be necessary at all times.

2 Q Well, I think you are
3 perhaps giving the same as Dr. Gunn. You want the
4 authorized officer, the government or regulatory body,
5 to have a little bit of leeway but as far as his
6 writing out a code or something by which people
7 operate, you are in general agreement with that?

8 MR. MARSHALL: Well, sir, I
9 don't think anything's been said about the authorized
10 officer. As I understood the discussion this morning,
11 consultants were going to be asked about recommenda-
12 tions and whether or not they agreed with certain
13 recommendations, or they didn't.

14 MR. TEMPLETON: Well, I think
15 it was suggested that the ultimate authority is that
16 of the government, and I assume that the authorized
17 officer is the person representing the government who
18 would see that regulations are adhered to.
19 Whether you call him the authorized officer is immater-
20 ial. The government representative, if that's agreeable
21 to you, is just as good for me.

22 A Sorry, sir, I
23 had a little difficulty in hearing you.

24 MR. TEMPLETON: I think Mr.
25 Marshall was complaining about using the term "authorized
26 officer", and I said I didn't really care whether he
27 called him an authorized officer or the government
28 representative that you had said were the ultimate
29 authority lies.

30 MR. MARSHALL: No, that wasn't

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1 what I was complaining about, Mr. Templeton. It was
2 your were suggesting that Mr. Jakimchuk was recommending
3 that the authorized officer had some discretion. My
4 point was that my understanding about our long
5 discussion this morning was that you might be asking
6 the witnesses whether they agreed with some recommend-
7 ations that your members had made, and you're referring
8 to the code^{for the}/source of some of these recommendations.
9 I thought that was as far as we were going.

10 MR. TEMPLETON: Well, he said
11 he did agree in general, I think, but he wanted a
12 little bit of leeway left.

13 A I don't like to carry
14 leeway too far because I think that a regulation should
15 be quite clear and cover most conditions, if it is
16 going to be effective. I think what I was trying to
17 distinguish was that based on our studies that the
18 actual altitude level differs somewhat than it would
19 for the bird situation.

20 Q Yes.

21 THE COMMISSIONER: Well, you
22 were saying 1,000 feet/^{would be adequate}as far as caribou were
23 concerned.

24 A Yes sir.

25 Q 2,000 feet is unnecessary

26 A No, I didn't say it's
27 unnecessary, I said it's even better.

28 Q Yes, even better; but if
29 it came to a certain amount of^{wrist wrestling} with the Department
30 of Transport, there's room for some give and take here.

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1 A Yes, as far as the
2 mammals are concerned.

3 Q And I take it that you
4 subscribe to the usefulness of having this written
5 down for the guidance and to require compliance with
6 it of the pipeline people and everybody else.

7 A Yes sir.

8 MR. TEMPLETON: Q In the
9 code again on item 15.3-K, paragraph K,
10 "Permittee shall construct and maintain the
11 pipeline so as to assure free passage and
12 movement of big game animals. During the
13 construction period, permittees shall monitor
14 caribou migration so as to ensure that
15 migrating herds do not encounter open trenches
16 strung-out pipe on the ground surface, or
17 operating pipe-laying construction spreads."
18 Would you agree with that, or would you suggest it be
19 altered?

20 A Or would I what?

21 Q Suggest that it be
22 altered.

23 A Well, I've testified, I
24 think, at some length on this same general area and
25 have said that I definitely -- we have recommended
26 similar type approach. I don't really feel I should
27 analyze word for word and get into a semantical argument
28 on some things, so I agree with its intent, yes, parti-
29 cularly the monitoring and assuring of the free passage.

30 Q You have made quite a

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1 number of recommendations, Mr Jakimchuk, on site
2 specific things which can't be put in a general code
3 because they apply to that particular site. I think
4 this is good. The question I have is, how do you
5 recommend these be put in some kind of form that is
6 going to get to the people in the field or those
7 people who are planning operations in those particular
8 sites?

9 A Well, this is a process
10 that we have been involved with actually for some time
11 because we have made many, many site specific recommen-
12 dations which we have presented to the applicant and
13 to the engineers and so on, and these are either
14 implemented or modified or not implemented according
15 to other considerations, as part of a design. So let
16 me emphasize there is a design element here that's
17 actually occurring at the present time.

18 Q Yes, I don't doubt that.

19 A And you want to take this
20 further to the field condition, I believe, was the
21 thrust of your question. Well, I think Mr. Hemstock
22 has described the applicant's proposal for monitoring
23 and for having environmental inspectors and biologists
24 monitoring the operation\$, and I would take it that that
25 is part of the mechanism by which these measures would
26 be implemented in the field, by a concert between the
27 applicant's environmental inspectors, consultants, and
28 the regulatory agency or agencies involved.

29 Q Yes, I think we're not
30 in disagreement about that. I think what I'm trying to

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1 get at is how do you -- what is the most expeditious
2 way of getting those concerns that you have on site
3 specific matters into the heads of the people that are
4 going -- that have the opportunity to alter the
5 environment?

6 A Well, most of the site
7 specific matters that we have dealt with, and are
8 dealing with, relate to details of routing, timing
9 or design which we expeditiously transmit to our
10 client, and Mr. Hemstock and others. In other words,
11 I don't think there's a requirement for the five or
12 six or 7,000 construction workers to be aware of
13 every site specific concern. There is the design ele-
14 ment. I think most of the other concerns, such as
15 harassment, for example, that we have, are areas where
16 we require a manual or a code and the education program,
17 and a monitoring by inspectors in the field.

18 It will be part of the final
19 design to identify those things to be watched out for
20 and it will be the inspectors' job to ensure that they're
21 implemented.

22 Q Yes, I realize that, but
23 you know, Mr. Hemstock and I used to work on construc-
24 tion spreads and I don't think we read many biological
25 reports in those days. I didn't; I don't know about
26 him, and I think the thing that I'm trying to do is
27 to talk about the technique of getting these environment
28 protection measures built in so that, in a form that
29 those people who are in the field can recognize them and
30 live up to them. We tried this on this atlas by

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McCart, Jakimchuk
Cross-Exam by Templeton

1
2 putting flags up because we felt that they might not
3 read a report but they might look at a red flag. Now
4 I'd be interested in any other techniques you might
5 have because I think this is fairly important.
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1 A Well, it seemed to me
2 and I am getting a little bit out of my depth here in
3 as much as I am probably talking about project manage-
4 ment and this type of thing. But it seems to me
5 that it is a job of the supervisory personnel, acting
6 on behalf of the client, to implement those things
7 that have been identified as environmental concerns.
8 Everyone, as much as possible should have an appreciation
9 of what these are and where these are. In terms of
10 specific techniques we propose to do searches in ad-
11 vance of construction activity along the alignment,
12 for example, to search for dens or for any possible
13 problem areas, and inform the supervisory personnel,
14 but there has to be a chain of command there. I know
15 that it is a difficult problem, the cat operator
16 in the field. It is not something that an environ-
17 mental consultant can solve, however, it has to be
18 solved by the chain of command, by the supervisory
19 chain of command and control.

20 Q Yes, I don't
21 doubt that. The problem is how do we make the
22 recommendations that are going to be the most effect-
23 ive.

24 A Well, we try to do that
25 on the basis of our biological data and get them into
26 the hands of the client and prioritize them as much
27 as we can.

28 Q Mr. Hemstock, you look
29 like you are about to give forth an answer, are you?

30 WITNESS HEMSTOCK: No, sir.

Banfield, Gunn, Hemstock
McCart, Jakimchuk,
Cross-Exam by Templeton

1 MR. TEMPLETON: I think that
2 those are all the questions that I have, Mr. Commis-
3 sioner.

4 THE COMMISSIONER: That
5 brings us to you, does it, Mr. Scott?

6 MR. SCOTT: Mr. Hollingworth
7 had some questions on, I think, non-bird matters and
8 I wonder if he is able to deal with him now?

9 MR. HOLLINGWORTH: I think
10 that you will find my cross-examination very inter-
11 esting. I don't have any.

12 THE COMMISSIONER: You don't
13 have any questions?

14 MR. HOLLINGWORTH: No, I
15 have no questions.

16 THE COMMISSIONER: Well,
17 I think that we will stop for a few minutes and
18 then here from you, Mr. Scott.

19
20 (PROCEEDINGS ADJOURNED FOR A FEW MINUTES)

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Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

MR. MARSHALL: Mr. Commissioner, we were discussing earlier in the day a report that's come out, and you expressed an interest in it. I've given you copies of two of the volumes and I have the third volume for your perusal, sir. I should point out that this is a report of the staff of the Federal Power Commission and it's a draft environmental impact statement. I understand there's some distinction between the Federal Power Commission and its staff --

THE COMMISSIONER: Yes, oh yes.

MR. MARSHALL: -- it has a separate role from --

THE COMMISSIONER: It doesn't represent the views of the Commission at all.

MR. MARSHALL: We can leave this with you, sir.

THE COMMISSIONER: Thank you very much.

MR. SCOTT: Gentlemen, I have some people advising me who have suggested a number of questions I should ask you.

CROSS-EXAMINATION BY MR. SCOTT:

Q The first is for Mr. Jakimchuk. Vern Hawley wants to know when he's going to get his grayling flies back.

WITNESS JAKIMCHUK: Will I ever get peace?

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

1
2 Q Well, I've asked it now.
3 Perhaps I can turn to something that I regard as a
4 little more important, and it arises out of the ques-
5 tions Mr. Bayly asked yesterday, and the debate into
6 which I attempted to inject myself about the reference
7 points against which you made your assessment, and
8 you will recall, Mr. Jakimchuk, and perhaps it's
9 easiest to ask you first about it, that you were
10 asked what it was precisely you assessed the impact
11 of. The pipeline or the pipeline plus the Dempster
12 Highway and so on, that exchange occurred, and before
13 we get to it I would just like to ask you if I under-
14 stand the situation this way, vis-a-vis the caribou
15 herd. Would it be obvious that the caribou herd
16 will be subject to a measure of stress by any develop-
17 ment that is in or around their traditional territory?

18 A They may be subject to
19 a measure of stress, by any development. As to whether
20 or not that would be significant would be contingent
21 upon the type of development, yes.

22 Q And I take it then that
23 as developments proliferate and develop and increase
24 in number, the stresses or potential stresses mount
25 and increase.

26 A Potential stresses would
27 increase. Once again whether they would be significant
28 or not depends on the nature of the developments.

29 Q All right, and though we
30 may not know precisely where it is, I take it that

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

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there is a cumulative stress or impact that will be
damaging to the herd.

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A There is potentially ,
you know, very extreme situations of cumulative
impact that would be damaging. I don't think we can
identify very precisely where that is, except at very
great extremes.

9

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12

Q I understand that what
you're telling me is that you can't precisely measure
the tolerance of the herd in the face of these potential
or real impacts.

13

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A One can measure the
tolerance of the herd to a given set of conditions or
to a given set of stimuli, yes, and we have endeavored
to do that in some of our experimental studies.

17

18

19

Q Well, to be perfectly
direct then, what I'm getting at is this, the Dempster
Highway is almost completed, isn't that so?

20

21

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A That's my understanding.
Q And let us assume for
the moment -- and I think this is perhaps a reasonable
assumption -- that it will be completed before the
pipeline is completed, perhaps before it's started.

25

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A O.K., if you wish to make
that assumption.

THE COMMISSIONER: Well, the
government says by 1977.

MR. SCOTT: All right.

Q And you have said that

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

1
2 you regard the Dempster as having severe potential
3 impact on the caribou herd.

4 A That's correct.

5 Q All right. Now, in
6 measuring the impact on the herd, by this pipeline
7 development, have you had regard to the preceding
8 impact of the Dempster Highway?

9 A We emphasized the
10 pipeline development in our analysis, and the impact
11 it would have, and recommendations for mitigative
12 measures, on the --

13 Q Well, you see, that
14 doesn't answer my question.

15 THE COMMISSION: Mr. Scott,
16 I thought this question had been asked and answered
17 before. It was my understanding that all of these
18 gentlemen excluded the impact of the Dempster in
19 determining the impact they felt the pipeline would
20 have. I thought that's what all of them said.

21 MR. SCOTT: No, I think Mr.
22 Hemstock at page 14450 -- sorry, 14449, after the
23 other panelists had in effect been told, said,

24 "Well, I am not sure that the panel has really
25 addressed the question Mr. Scott asked, and it
26 seems, it is my understanding or I should say
27 our studies have directed themselves to the
28 baseline that now exists and we have not
29 addressed ourselves any more than the panel
30 has indicated to the things which may happen

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

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Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

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our analysis was pertaining to the gas pipeline.

Q Well, what concerns me is this. If the Dempster is completed before the pipeline is built, it will have certain impacts that you have described in a general way, or may have certain impacts that you have described in a general way. Then a gas pipeline will be built that you have analyzed.

A Yes, that is correct.

Q Now, what troubles me is, are we now, from your evidence, in a position to assess us the impact that will occur when both those things are in place? Does your evidence purport to do that, or does it do something else?

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

1 A Well, I don't think
2 it purports to present the impact of both of those
3 developments. It is directed towards the gas
4 pipeline and the effect that a gas pipeline would have
5 on the caribou. It doesn't purport to present a
6 combined effect of the Dempster and the pipeline.
7 That is why I have pointed out the implications of
8 the Dempster Highway saying that here is a development
9 with effects -- here is what we have analysed with
10 respect to the gas pipeline, and it differs.

11 Q So that when the gas
12 pipeline is completed in 1978, let us say, you will
13 be able to tell us the incremental effect, if I can
14 put it that way, of it alone, by your impact assess-
15 ment, but you will be able to tell us nothing about
16 the viability of the caribou herd that then exists
17 in that setting, because you will have omitted an
18 existing pressure, and its effect, the Dempster
19 Highway? Have I got that wrong, or have I got it
20 right?

21 A It is kind of compli-
22 cated, Mr. Scott. I almost prefer to have you
23 restate it.

24 Q All right. In 1978
25 there will be a completed Dempster Highway, we all
26 agree about that, and there will be, let us say, a
27 gas pipeline in place. I take it that all you will
28 be able to tell us from the work that you have
29 done and presented here, is the incremental effect
30 of the gas pipeline in terms of impact, what it alone

1 will do.

2 A That is what we are
3 most prepared to predict.

4 Q Yes.

5 A -- at this point, because
6 there are variables such as the highway, that are
7 beyond our control. We cannot predict what future
8 regulations may be applied, if there will be any.
9 We can't even predict for certain if it will be
10 completed.

11 Q All right, and it
12 therefore follows, that your prediction is not able
13 to tell us anything about the state of the herd, or
14 that your prediction as to the state of the herd
15 in reality, in 1978, because you have had to
16 leave out the Dempster?

17 A That is by in large
18 true because we have not addressed specifically a
19 study of the impact of the Dempster Highway on the
20 herd.

21 Q Well, Mr. Bayly asked
22 you something about methods, Mr. Jakimchuk, and let
23 me ask something about them. Now, bearing in mind
24 that what we are interested in, is the viability of
25 the herd in 1978, which we will assume is the completion
26 date, is this the way you would have gone about
27 the exercise if you had your own way?

28 A If I was with a govern-
29 mental agency I would not have gone about it in
30 precisely that way.

1 Q If you had your own
2 way, Mr. Jakimchuk, wouldn't you have said, "Well, the
3 exercise I am engaged in is a rather academic one because
4 it tends to be meaningless if the realities, that is,
5 the existence of the Dempster in '78 is not taken
6 into account" ?

7 A Mr. Scott, it has
8 been taken into account and I don't by any means
9 feel that our approach has been meaningless or unreal
10 inasmuch as we have taken the opportunity of this
11 Inquiry to raise questions and concerns relating to
12 the viability of that herd. We are not assuming
13 responsibility for that, but our information has been
14 brought to bear on the overall consideration
15 of that herd.

16 Now, I may not have done
17 this in the course of every annual report to the
18 applicant, because I was not charged with that
19 responsibility.

20 Q Let me put it this
21 way, bearing in mind the potential risks for the
22 Dempster, it is conceivable that the second project,
23 and let us not pretend that it is the gas pipeline,
24 it might be something else. But the second
25 project could be the straw that broke the camel's
26 back. YOU can conceive of that scenario?

27 A It depends on what the
28 project is.

29 Q All right, well, let's
30 assume a certain project, a second project, and it is

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

1 conceivable on that scenario that the second project
2 could be the straw that breaks the camel's back,
3 and you could --

4 MR. MARSHALL: He agrees
5 with you, it depends what the project is, where are
6 we going.

7 MR. SCOTT: Well, all right,
8 isn't it necessary in order to assess the second
9 project and its effect on the herd, to know the
10 effect in fairly accurate terms of the first project?

11 A Yes.

12 Q And so that for a
13 prediction about the effect of the second project
14 to have meaning, you must make a prediction about
15 the effect of the first project?

16 A You must -- it would
17 be more important to know the actual effects of the
18 first project based on measurement monitoring

19 Q But if you can't know
20 the actual effects, you must try to predict them as
21 best you can?

22 A Yes.

23 Q Yes, and I take it that
24 that has been outside your terms of reference in
25 any precise way?

26 A It depends on what you
27 are talking about as the first project now.

28 Q The Dempster Highway.

29 A We have not been charged
30 with that as a detailed responsibility.

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

1 Q Well, now, I would like
2 to turn to Dr. Gunn, and ask some questions about
3 birds and, first of all, Dr. Gunn, I would like to
4 be sure that I understand the full complexity of the
5 issue that you present to us.

6 Now, Mr. Jakimchuk has been
7 talking about one species, let us say, caribou, and
8 I take it that you have been talking, when you
9 speak of birds, of many species?

10 WITNESS GUNN: Yes.

11 Q I think for example, in
12 your studies, you found some 61 species in a period
13 of some two weeks in July of 1974?
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Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

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A Where?

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Q On the North Slope.

4

A That's probably a

5

reasonable figure. I think that our studies over the

6

period of time we've been making them have encountered

7

about 100 species, more or less, on the North Slope.

8

Q And are you familiar

9

with Brooks' work?

10

A Which Brooks?

11

Q James W. Brooks.

12

A I don't recall it, no.

13

Q He's purported to have

14

found -- he's reported to have found, and this includes

15

non-breeding visitors and accidentals -- 171 species

16

along the Arctic Slope, some of them occurring only

17

in minute quantities.

18

A That probably extends over

19

to the Bering coast.

20

MR. MARSHALL: I take it this

21

is a report listed in your list of reports, is it, that

22

we could have regard to?

23

MR. SCOTT: I'll find it for you

24

Mr. Marshall.

25

MR. MARSHALL: Have you got a

26

title?

27

MR. SCOTT: I haven't it in

28

front of me, but I'll find it for you.

29

Q Now, well then, may we,

30

Dr. Gunn, take it that we are dealing with somewhere

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

1 between 125 and 150?

2 A In the ---

3 Q Species.

4 A In the area of the North
5 Slope?

6 Q In the area of the
7 North Slope.

8 A No, I think that's too
9 high.

10 Q All right, 100-125?

11 MR. MARSHALL: Well, he said
12 100, Mr. Scott. Now if you've got a reference that
13 you can refer us to or a report, we can look at it,
14 you know, he can tell you what he knows.

15 MR. SCOTT: All right, 100?

16 A I have a theory, Mr.
17 Scott, that if you stand in one place long enough
18 you can see every bird that exists, but you won't see
19 very many of a good many kinds. I think 100 species
20 is a reasonable figure.

21 Q All right, and isn't
22 it a clear fact that each of the species has a different
23 life history, different food requirements, different
24 habitat requirements, different migratory routes,
25 and different incubation times?

26 A Yes sir.

27 Q So that you are dealing,
28 if I can put it this way, with a range of species and
29 life habits that is extraordinarily large compared, for
30 example, to Mr. Jakimchuk, when he talks about caribou.

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

1 MR. MARSHALL: Well, that's not
2 right, Mr. Scott.

3 MR. SCOTT: Dr. Gunn can tell
4 me if it's not right.

5 MR. MARSHALL: Well, you're
6 talking about what Jakimchuk has talked about.
7 Jakimchuk has addressed all the mammals or a great
8 number of mammals, and if you look at the Biological
9 Report series you will see that Mr. Jakimchuk has
10 discussed all sorts of them. Mr. Bell had a discussion
11 with him about moose.

12 MR. SCOTT: Well, Mr. Commis-
13 sioner, that's why I added the qualification when Mr.
14 Jakimchuk speaks about caribou. I'm trying to get
15 Dr. Gunn, and I've no doubt that we agree, to expose
16 the dimension of the bird problem and wouldn't it be
17 true, Dr. Gunn, that dealing with 100 species, each of
18 them is different in the ways I have attempted to
19 isolate them?

20 A That is true.

21 Q Yes, and it follows that
22 each of them might react rather differently to differ-
23 ent kinds of disturbance?

24 A That is true.

25 Q And each of the species
26 will react or may react differently, depending upon
27 the time of year of the disturbance and the phase of
28 their life cycle that occurs at that time?

29 A I would not only agree
30 with that, but I would add that within a species

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

different populations might react differently, and
different individuals might react differently.

Q And I suggest to you, therefore, that the problem of predicting impacts on birds is immeasurably more complex than attempting to predict the impact on one species, of let us say animal, and I don't ^{demean} Mr. Jakimchuk's work.

A I think you're asking
me is it more complex to --

Q To deal with 100 --

A -- to deal with 100 than
with one, the answer is yes.

Q Yes, and I take it that it is not fair to say that because one species has a small population, that that makes it any less important than one that has a large population.

A I think that's a reasonable statement.

Q Because for example the peregrine falcon has a relatively small population but it is the last of its type on earth, and therefore a certain --

MR. MARSHALL: It's the last of its type on earth?

MR. SCOTT: Of its species.

MR. MARSHALL: Which one is the last one of its species?

MR. SCOTT: The peregrine falcon.

THE COMMISSIONER: The ones

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Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

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value judgments to the native rather than to an
accidental.

A Yes, that's true.

Q And I take it that one
of the things -- and I don't advance it except most
seriously -- about the bird populations is that they
are not the property, the exclusive property of the
people of Canada.

A That is true.

Q These bird populations,
with some exceptions, are the joint property of the
people of Canada and the United States and Mexico, and
other places where they live and are used by people.

A I don't consider them,
sir, the property of any people, actually. I don't
like to think of them as articles of property, but
they do concern many of the species that we are
dealing with are migrants and they reach several
continents, so that many nations are involved in that
they provide habitat for the birds that we are dealing
with at one time of year or another.

Q The distinction I make,
perhaps an obvious one, is that if the Canadian people
by an act of their will, decide to construct works that
will destroy the caribou herd, that is something for
which the people of Canada alone will suffer.

A I don't agree, sir.
The caribou herd we're considering is also spending a
good deal of its time in Alaska.

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

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Q That's a bad example.

3

The Canadian moose. If we're talking about snow geese,
for example --

4

5

A All right.

6

Q -- and other birds, we

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are talking about bird populations which benefit other
parts of the world, and upon which other people may
depend in the same way as our people do.

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A I think that's a reasonable

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statement, yes.

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Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

1 Q Well, now, I would
2 like you just, if you could, to take the snow geese
3 first and describe cyclicly throughout the year
4 where they are to be found in the subject area with
5 which we are concerned.

6 A The population of
7 geese, of snow geese that we are concerned with
8 winters, and let me take them from the wintering
9 ground, / ^{they} winter in part in California, many in the
10 Sacramento Valley, and some in Mexico. That is
11 where they spend the winter and then along about
12 March in the year they are moving north and they
13 travel north through the western United States
14 coming up through Oregon and then move northward
15 through Alberta, and they are there in April and
16 by early May many of them are in the region of the
17 Peace-Athabasca Delta in Northern Alberta. It is
18 a favourite staging place for them, but by no means
19 the only one.

20 Then as the spring moves
21 north they move northward towards the Mackenzie
22 Delta. As we have described many of them follow the
23 route down the Mackenzie and at that stage the
24 breeding and nesting cycle is approaching, there is a
25 good deal of courtship taking place, particularly
26 at the resting sites that they have on the islands in
27 the Mackenzie River, and then by late May they are
28 concentrated pretty largely in the region of the
29 Mackenzie Delta, the outer delta.

30 THE COMMISSIONER: Excuse me,

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

1 the outer delta, did you say, sir?

2 A Yes, sir. Most of them
3 are in the outer delta. Then there is a movement
4 towards the actual nesting grounds and in the past
5 a small number, about 2,000 or so, have actually
6 nested in the outer delta, but this apparently has
7 not been the case in the last year or two. A
8 rather larger number, about 5,000 or more, nest in the
9 vicinity of the Anderson Delta, about 150 miles to the
10 east along the coast, and these are colonial nesters,
11 that is to say, instead of their nest being
12 separated very widely they tend to nest in concentrated
13 areas.

14 The great majority, however,
15 fly over to Banks Island and there are nesting
16 sites, chiefly on the west side of Banks Island, at
17 the mouths of the rivers that flow out in the west and
18 particularly the Egg River, and this is where the
19 main population of the snow geese nest, and they
20 reach that site, or these nesting sites at the
21 beginning of June, late May or the beginning of
22 June, and there may still be snow on the ground in
23 these places at that time, or there may not. At any
24 rate, the weather at that time is quite a critical
25 factor. The females are ready to lay their eggs
26 almost immediately upon arrival, and this egg laying
27 period can only be sustained for a matter of days,
28 perhaps, eight or ten days if the nesting is to be
29 successful.

30 If conditions are right,

1 nesting begins, the eggs are laid and incubation
2 takes place over the next six weeks or so and then
3 finally the eggs are hatched. I would say that the
4 males and females remain in the colony during this
5 period of time. The eggs are hatched and the
6 young goslings are able to move about immediately
7 after hatching and they are moved off to areas
8 where they can graze on grass and sedges, and
9 we are now into the period of late July and August and
10 at this time the young put on weight quite rapidly.
11 The adults go into a molting stage, which in
12 waterfowl is quite critical because at that time they
13 lose all the primary feathers of their wings at the
14 same time and become flightless and there is a period
15 of about a month or so when they are flightless
16 during this time.

17 However, by the time that
18 they regain their flight, have their new feathers,
19 the young are also in a position to fly, if everything
20 has gone successfully, and in late -- middle to
21 late August they start moving out, southward to the
22 mainland, the main coast from the Anderson River,
23 westward. Some come to that portion of the country,
24 some apparently come directly to the delta, and some
25 apparently come directly to the North Slope, and
26 during this period of time they are feeding intensively
27 to put on weight and regain weight lost during the
28 incubating and molting period and they are on the
29 North Slope and in the Delta from their period of
30 arrival, which we said this morning might be as early

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

1 August the 15th, but more often is about the 25th,
2 and they remain there feeding intensively, as we
3 have also discussed, during daylight hours, about
4 34 minutes in every hour, and if all goes well they
5 are then in good condition to undertake the long
6 flight southward back in the general direction of
7 Alberta, and as they feed on the North Slope, if it
8 is clear of snow, the snow gradually tends to descend
9 down the mountains and the foothills and they leave
10 there and some, we believe, towards the end of
11 September may migrate directly to Alberta. Others
12 may go back into the delta and leave from there
13 southward, and then they return down to -- many of
14 them go into the area of the Hay-Zama Lakes in
15 northern Alberta, others to southeastern Alberta
16 and from there back down in November and December
17 through, say, Utah, to their wintering grounds in
18 California and Mexico.

19 Q Well now, Dr. Gunn,
20 dealing with the snow goose, can the following
21 observations be made about what you have just
22 described, that while their progress may vary from
23 year to year, that is, they may arrive at given
24 locations at different times, that is, earlier or
25 later, the progress from stage to stage and as to
26 its place, is remarkably consistent?

27 A Yes, it is, yes.

28 Q And the second thing
29 is, it is controlled by a very strict time frame, that
30 is to say, any impediment that destroys the sequence

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

1 of their process or its timing, may be extremely
2 damaging?

3 A The leeway they have
4 in timing is quite narrow. They have a very full
5 program, if you put it that way, from arrival in
6 spring to departure in fall and any disruption of
7 that tends to have significant results.

8 Q A substantial disruption
9 example, for example, could prevent either nesting or
10 the development of the chicks sufficiently to enable
11 them to fly back?

12 A Yes, I think that
13 is reasonable, if you include in substantial dis-
14 ruption, natural events such as weather conditions --

15 Q Yes.

16 A -- we have examples of
17 that, yes.

18 Q Yes. These obstructions
19 can be natural as well as emanating from other
20 sources ?

21 A Yes.

22 Q And the third thing
23 I suggest to you is that it is apparent from that,
24 that the strength of the bird, because of the distances
25 it must fly, is a fundamental consideration in its
26 ability to survive?

27 A Yes, I would agree
28 to that.

29 Q Yes, and have you --
30 are you aware of the characteristic that has been

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

1 described to me that will enable, for example, snow
2 geese who are flying on the way south from Banks
3 Island, and who would normally fly, let's say, to a
4 certain portion of the Arctic Coast in order to
5 fatten up, to sense that weather conditions will be
6 unsuitable at the Arctic Coast and to stop at another
7 location, almost as if predicting the unsuitability
8 of the conditions at the place where they would
9 normally fly?

10 A No, I am not aware --

11 Q I have been told --

12 A I can't prove that,

13 no.
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Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

1 Q Well now, I take it that
2 for each of the species a pattern that has the same
3 characteristics exists, or that has like characteristics
4 exists.

5 A I wouldn't agree entirely,
6 because for some species the conditions are not as
7 stringent as they are for snow geese. Snow geese are
8 rather out on the extreme end of timing problems.

9 Q Well, that's without
10 detailing it, with the same precision. Can you give us
11 simply the migratory route and the stopping points of
12 the swans?

13 A That's another long
14 story, sir, but I'll be glad to -- I'll try to cut it
15 short.

16 Q I don't need to know
17 the details of incubation, etc. You can simply tell
18 me where they come from, where they fly, and where
19 they stop.

20 A All right. In the
21 -- along the North Slope and in Alaska we encountered
22 two populations of swans or at least they winter
23 separately in quite separate areas. The eastern popula-
24 tion winters in the area of Chesapeake Bay off Maryland,
25 and a few coastal locations south of that, and in
26 March they move north-westward, traversing Pennsylvania,
27 Southern Ontario, Michigan, Wisconsin, Minnesota,
28 North Dakota, Saskatchewan, again some of them coming
29 into the Peace-Athabasca Delta, and then many of them
30 heading towards the Mackenzie Delta but in this case

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross- Exam by Scott

1 not many of them follow the route of the Mackenzie
2 River itself. I think for the reason that it's not
3 a direct route. They simply go over to the east and
4 head straight for the delta. That's a good many of
5 the birds go that way, but others come up through the
6 western side of Hudson Bay to the Canadian Arctic
7 coast to the east. Part of that population is spread
8 over that area as far east as Baffin Island.

9 Some of the Maryland birds
10 go -- travel westward from the Mackenzie Delta as far
11 as Prudhoe Bay and beyond, some nesting along the
12 North Slope as far as Prudhoe Bay and beyond it to
13 Point Barrow and so on. Then there is a Pacific
14 population that nests again that winters down in
15 California and comes up northward in March and April and
16 some go up the Pacific coast to the Yukon and Southern
17 Alaska; others come through Alberta and about the same
18 time their confreres are going up through Saskatchewan
19 and they then move up into Central Alaska and they breed
20 largely along the coast of Alaska, and the two populations
21 meet somewhere along the coast in Northwestern Alaska,
22 we think. We're not sure if there's any overlap of
23 these populations but there may be some.

24 The fall migration route is
25 roughly the reverse of the spring route.

26 Q And Dr. Gunn, I take it
27 that the swan does not have as pronounced a staging
28 process as the snow goose, that many of them, in short,
29 fly south from the areas in which they have nested.

30 A I think there is some

Banfield, Gunn, Hemstock
M cCart, Jakimchuk
Cross-Exam by Scott

1
2 quite pronounced gathering of families before they
3 leave, but not as pronounced as in the case of snow
4 geese, and they tend to hang on, probably about the
5 last birds to leave the slope, they hang on until
6 it's just about frozen up.

7 Q All right. Well now,
8 is it true, as I understand, that for the swans, the
9 delta is a principal or major nesting area, and
10 departure point.

11 A Yes, it's a major
12 nesting area and departure point.

13 Q And particularly, I take
14 it, and perhaps this is one of the sources of your
15 concern, the cross-delta proposal is very close to this
16 principal or major area.

17 A That is true.

18 Q Yes. Now, going back to
19 the snow geese, the importance of the pipeline from
20 their point of view is that the, as you've said, the
21 Arctic coast is their principal staging area.

22 A Most of the staging
23 takes place a little back of the coast on the North
24 Slope.

25 Q Yes.

26 A And in the delta
27 itself.

28 Q Well now, can you do
29 exactly the same thing for one more species and then
30 I'll be finished, and that's the golden plover?

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

1
2 A Yes sir, I'd like to
3 do that. That will leave us only 97 to go.

4 Q No, I'm not going to
5 take you through the others. Birds are my one interest
6 and I'm going to vent myself on this Inquiry for the
7 rest of the afternoon.

8 A Again, ^{there are} two populations
9 of golden plover that we have in Arctic Canada, and
10 I'll sketch the eastern population very briefly.
11 They winter on the east coast of South America and on
12 the plains of South America, Argentina, many of them,
13 and come north in spring up through South America,
14 cross the Carribean, and enter United States through
15 the Gulf Coast and come up through eastern and
16 Central United States and Canada, and continue on
17 northward to the Hudson Bay region and the Arctic
18 coast and some of the lower islands in the east.
19 They do a lot of strange things in that they don't
20 go back the same way, They stage in Labrador and then
21 fly directly across the north Atlantic several
22 thousand miles non-stop to reach the Brazilian coast,
23 that's probably the first landfall they make from
24 Labrador.

25 The Pacific population can
26 be found in wintertime in such places as Hawaii, and
27 you might look out for them, sir, ^{if you are} there, and other
28 islands and some reach as far as Australia in wintertime.
29 They in turn do a rather --

30 THE COMMISSIONER: All in the

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

1
2 line of duty, doctor.

3 A Yes sir, yes sir.

4 They in turn do a rather fantastic flight, flying
5 across the North Pacific, over the ocean a good many
6 hundred miles to landfall in Alaska, and the
7 British Columbia coast, I expect, and from there
8 across to the North Slope where they are common
9 nesting birds on the North Slope, ^{they are} birds of the dry
10 tussock tundra, largely. That's where we find them
11 commonly, and they nest commonly along the proposed
12 route of the pipeline.

13 Q Well now, would you agree
14 that in North America the Mackenzie Delta and adjacent
15 areas is a principal and major area of influence for
16 bird populations?

17 A Yes sir, there's no
18 question about it.

19 Q And I take it that it's
20 clear from what you've said, taking only three of your
21 100 species, and leaving the others for Mr. Marshall
22 to discuss with you privately, that this is in a sense
23 a dispersal point for birds, really for all parts of
24 the world, or many parts of the world?

25 A Yes, it is a place where
26 migration, many migration routes meet and disperse from
27 there in different directions.

28 Q Yes. Now are you aware
29 of efforts that have been made by various organizations
30 -- I think including the Canadian Wildlife Service --

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

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to place a dollar value on major game birds?

A Yes sir, I am aware of
the efforts that have been made.

Q Yes, and I take it you
would be aware that after considering the investment
of hunters, and the value of the birds to natives, and
to persons in other countries, that -- and it's a
rough estimate -- that an attempt has been made to
estimate the value of a snow goose at \$50?

A I am aware of that
estimate ,yes.

THE COMMISSIONER: Who made
this attempt?

MR. SCOTT: Canadian Wildlife
Service.

THE COMMISSIONER: And they
base it on what?

MR. SCOTT: Well, they base it
on a variety of factors.

MR. MARSHALL: Does that
include investment in shotgun shells?

MR. SCOTT: Yes, it does.
Investment by sportsmen in the sport, the evaluation
of the bird as food for native people, both here, I
presume, and in other places, and factors of like
type. It's a rough guide but it's not an unsophisto-
cated exercise.

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

1 THE COMMISSIONER: Well, the
2 two values that were calculated are the value to
3 native people for food and the value to the rifle
4 manufacturing industry and the shotgunshell industry
5 -- is that how they worked it?

6 MR. SCOTT: And the
7 sportsmen and tourists. The difficulty, Mr. Commission-
8 er --

9 THE COMMISSIONER: The
10 aesthetic value to the tourist who just wants to look
11 at them?

12 MR. SCOTT: Well, not
13 necessarily the aesthetic value, the hunting value.
14 The difficulty in approaching the entire subject of
15 birds, of course, is that they are perceived by some
16 as having purely an aesthetic value and it is assumed
17 that that is the limit of their impact on a community's
18 economy and efforts have been made, rough though they
19 may be to value them, to value them in the way
20 our communities choose to value things, that is, in
21 dollars, and the Canadian Wildlife Service has come
22 up with that estimate. Do you have any quarrel with
23 that kind of estimate, Dr. Gunn, difficult to make
24 though it may be?

25 A I think that it
26 has its uses in economic considerations. The problem
27 that I have is that when you consider birds that are
28 not hunted, you may not come up with such a big
29 figure, but I consider these species important, too.

30 THE COMMISSIONER: Well, even

1 if you deal only with these birds that are hunted,
2 somebody said that there were 200,000 of them, I
3 think --

4 MR. SCOTT: I think
5 200,000 to 400,000, Mr. Commissioner.

6 MR. COMMISSIONER: Well, if it
7 is 200,000 that means that they are worth 12½ million.

8 MR. SCOTT: Yes, apart from
9 the fact that like the passenger pigeon, they are
10 irreplaceable.

11 MR. COMMISSIONER: Well,
12 apart from the fact that they are a species of bird
13 that, it seems to me, whose value ought to be measured
14 in terms that go beyond mere financial consideration,
15 because this is one of the principle species of
16 birds. If it is only worth 12½ million, its value
17 placed side by side with the pipeline system, which
18 is \$7 billion in 1974 dollars, and that is likely
19 underestimating it. I think any civilized person
20 would say that somebody is using the wrong kind of
21 scales to weigh these things. But at any rate,
22 carry on -- it is a Friday afternoon and --

23 MR. SCOTT: Dr. Gunn,
24 are you aware that the people in the State of
25 California, for example, in order to preserve the
26 depot, if I can call it that, for the snow goose, and
27 therefore to preserve it, to keep it alive and
28 extant --

29 A I am sorry, I didn't
30 get the word, preserve the depot, did you say?

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

1 Q That the people of
2 California, in order to preserve the areas, the
3 habitat for the snow goose in the State of California,
4 so that it would not be damaged, purchased reserves
5 at the cost of \$18 million to \$20 million, so that
6 the bird would be preserved?

7 A I know that lands had
8 been set aside, reserves had been made. I think that
9 is probably a low figure for the State of California.

10 THE COMMISSIONER: Was the
11 purchase made privately or by the state?

12 MR. SCOTT: By the state,
13 as I understand it, by combination of state and
14 federal funds.

15 THE COMMISSIONER: Yes, for
16 these very birds that you said winter in the
17 Sacramento Valley?

18 MR. SCOTT: Yes.

19 A Yes.

20 Q Well, now, --

21 THE COMMISSIONER: By the
22 way, Mr. Scott, that is an interesting thing that
23 you brought up. I am not looking down my nose at
24 the Canadian Wildlife Service's system of getting
25 a bead on the value --

26 MR. SCOTT: The point that
27 I think is significant, and my questions are directed
28 so that Mr. Marshall will make an effort to understand
29 it, as I am sure he will, is that Canada has an
30 international responsibility under various statutes and

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

1 has a responsibility, for example, to the people of
2 California who have expended their money in order to
3 preserve this bird. They may claim that that \$20 million
4 from us if we should destroy it.

5 MR. MARSHALL: You are going
6 to tell us about how many they shoot, too, are you?

7 MR. SCOTT: We will be
8 coming to that.

9 Q I am advised, Dr. Gunn,
10 that in fact the problem is worse than I thought, that
11 the cost of the land that has been paid for by the
12 people of the United States, in California, to preserve
13 this species, is \$12 million annually.

14 A That sounds like a
15 better figure.

16 Q Yes, that is less than
17 Arctic Gas has spent on -- I won't be sarcastic, but
18 I want to emphasize the importance of the dollar
19 investment in these populations, and I take it as
20 far as you are concerned, there is no doubt about
21 that question?

22 A What's the question?

23 Q The dollar value that
24 the peoples of other countries and this country have
25 invested in this one species, to leave aside the others
26 for the moment.

27 MR. MARSHALL: Well, sir,
28 really, it seems to me -- I am not a hunter, and I
29 guess that colours my perspective on these things --
30 but, so shotgun manufacturers and the hunters and so

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

1 put a big dollar value on it. I mean, is that --
2 what is --

3 THE COMMISSIONER: This is an
4 argumentative point anyway, and presumably the
5 figures are there, Dr. Gunn agrees, the point has
6 been made. It could have been made without his
7 being asked to concur. Arctic Gas has spent so
8 much money and the people of California have spent
9 more, so I don't know what that proves. They have
10 got more money.

11 I am eliciting an awful
12 lot of appreciation for these sallies, Mr. Scott. I
13 think that --

14 MR. SCOTT: Not for me,
15 Mr. Commissioner, not for me --
16 (LAUGHTER)

17 Well, we all have our
18 constituencies someplace.

19 Q Dr. Gunn, just to
20 summarize what we have taken from your excellent
21 report, I take it that first of all what you did, is
22 you did your base line studies which were designed
23 to identify critical areas and critical times?

24 A And to give us an
25 idea of the species present and their distribution.

26 Q Yes, and I take it that
27 in assessing the critical areas and critical times,
28 perhaps because of the time constraints or the
29 money restraints on your program, you were obliged
30 to concentrate on a number of major species rather

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

1 than making any attempt to examine the hundred
2 species that exist in the area?

3 A I don't think that that
4 is quite a fair statement, no. I think that our
5 client was very generous in providing us with funds
6 to do the job and the main thing was to get the
7 job done, not basically what it cost, and I think that
8 we looked at all the species we had to consider and
9 concentrated on those ones which obviously gave us
10 the greater concern because of sensitivity and matters
11 of concentration in certain areas.

12 Q And when you went on to
13 list critical areas as you did in your report, I
14 take it that you listed critical areas that were
15 critical to a number of species that you isolated
16 as being, either, as you say, particularly sensitive
17 or massing there in volumes?

18 A Yes, that is correct.

19 Q And therefore, would
20 it be wrong to understand your report to be an
21 exhaustive list of areas that are critical to any
22 of the hundred species?

23 A I think the key word
24 there is exhaustive. I think it would be wrong to
25 say it is an exhaustive list for all hundred species.

26 Q Yes. Well, now I would
27 like to ask you to consider a number of areas and
28 see whether perhaps you would add them to your
29 critical list. The first is the Babbage River Delta,
30 and Phillips Bay.

Banfield, Gunn, Hemstock
McCart, Jakimchuk
Cross-Exam by Scott

1 A These are both important
2 areas for birds, yes, and I think we gave them
3 consideration in the chief list that we have
4 presented, but we didn't include them because we
5 concentrated on the main areas. It was not -- we didn't
6 attempt to make it an exhaustive list of all areas.
7 But I agree with you that Phillips Bay is important
8 to waterfowl and shore birds, in part for nesting,
9 but largely for migration and molting and staging
10 periods on the North Coast.

11 Q YOU have taken the
12 trouble to list the critical areas, and there is an
13 inherent risk in that because, A) attention will
14 be paid to it; and I suppose there is the risk that
15 attention will be paid to nothing else but your
16 critical list, and what I am asking you to do is
17 to consider whether you would be disposed to add
18 the Babbage River Delta and Phillips Bay to that
19 list?

20 A In our studies of the
21 North Coast and our discussions with the client, with
22 the applicant, about where to put the staging sites,
23 if they are to be put on there, this matter came up
24 and we pointed out the areas that were of particular
25 concern along there and Phillips Bay was one of
26 these, and it is in part a result of those discussions
27 that the staging site selections were made for
28 Komakuk and Shingle Point.

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1
2 Q Well then, would it
3 be regarded as a critical area?

4 A I wouldn't regard it as
5 a critical area, no. I would regard it as an area of
6 major importance. I think Demarcation Bay is perhaps
7 as important.

8 Q Well, you're well ahead
9 of me. The next on my list was Demarcation Bay and
10 I induce you to add that to your list of critical
11 areas.

12 A We have drawn that to
13 the attention of the applicant and said that we would
14 prefer, on the basis of our work particularly this summer,
15 we felt that we would prefer not to have a staging
16 site located anywhere in Demarcation Bay and we have
17 asked them to look at Beaufort Lagoon to the west,
18 which is an old Dew Line site. It is important to birds,
19 almost as much perhaps as Phillips Bay, and it has been
20 the subject of a study area for members of the U.S.
21 Fish & Wildlife Service but nevertheless we feel it is
22 not as important as Demarcation Bay. So that has been
23 our response to Demarcation Bay.

24 Q Well, do I understand
25 from that, you've obviously made some recommendations
26 about Demarcation Bay, but would you add it to the
27 list of critical areas, or would you be content not to?

28 A Our list of critical
29 areas contains large areas including in fact that
30 whole coastal area, which would be included, would

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1 include both Phillips Bay and Demarcation Bay. We
2 haven't singled these out, but we have made it clear
3 to the client that our concern is not equally spread
4 over the whole coast because we know that there are
5 some areas that birds use much more than others, and
6 we have tagged these with a red flag, so to speak, so
7 that the applicant is aware of our concern for these
8 areas.

9 Q Well now, how about the
10 area bound by the Moose Channel Flats on one side and
11 Ellis Island and the Oliver Island group on the other?
12 Would you be disposed to add that to your list of
13 critical areas for birds?

14 THE COMMISSIONER: Well, just
15 before we go on, I think I know where those other
16 places are, but where are we now?

17 MR. SCOTT: Moose Channel is
18 on the left-hand side of the delta, or Dr. Gunn will
19 point it out,

20 THE COMMISSIONER: Yes.

21 A This section here, the
22 western part of the outer delta.

23 Q The western part of the
24 outer delta?

25 A Yes.

26 MR. SCOTT: Moose Channel
27 Flats are on the south of Shallow Bay, aren't they?

28 A Yes, as I understand it.

29 Q Would you be disposed to
30 add that to your list of critical areas?

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1 A Well, I consider the whole
2 of the Mackenzie Delta^a critical area, and particularly
3 the outer delta.

4 Q That is a major swan
5 nesting area for Canada, isn't it?

6 A That plus other portions
7 of the outer delta are. I agree, yes.

8 THE COMMISSIONER: Well, Mr.
9 Scott, it's 4:30 and I think we'll adjourn now.

10 We'll adjourn until Monday at
11 one o'clock. M r. Marshall, I take it you would prefer
12 to have Dr. McCart excused from further attendance?
13 No one surely has any questions for him.

14 MR. MARSHALL: I've checked and
15 I think that's the case, sir. Dr. McCart could spent
16 next week writing his report and I'm sure we'd all
17 benefit from that.

18 MR. SCOTT: I have no objection
19 to that, with one reservation that I mentioned to Dr.
20 McCart, and that is that I had a couple of questions of
21 Dr. Gunn about gravel mining sites and lakes, and I am
22 content that Dr. Gunn should attempt to answer those.
23 I'm sure he can, and Mr. Marshall can simply show
24 Dr. McCart the transcript to see if, from his vantage
25 point, there is any comment he wants to make later.

26 THE COMMISSIONER: O.K., well
27 one o'clock Monday?

28 MR. MARSHALL: Fine, sir.

29 (WITNESS MCCART ASIDE)

30 (PROCEEDINGS ADJOURNED TO DECEMBER 8, 1975)

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